



COMMONWEALTH OF KENTUCKY  
OFFICE OF THE ATTORNEY GENERAL

ALBERT B. CHANDLER III  
ATTORNEY GENERAL

1024 CAPITAL CENTER DRIVE  
SUITE 200  
FRANKFORT, KY 40601-8204

December 30, 2003

Thomas M. Dorman, Executive Director  
Public Service Commission  
211 Sower Boulevard  
Frankfort, KY 40601

RE: Responses to Commission staff and Company data requests in In the Matter of:  
An Investigation Pursuant to KRS 278.260 of the Earnings Sharing Mechanism  
Tariff of Kentucky Utilities Company, PSC Case No. 2003-00334 and An  
Investigation Pursuant to KRS 278.260 of the Earnings Sharing Mechanism of  
Louisville Gas and Electric Company, PSC Case No. 2003-00335

Dear Mr. Dorman,

Enclosed herewith are the original and seven copies responses of the Attorney General to data request posed by Commission staff by Order dated December 15, 2003 and to data requests posed by LG&E and KU. By this letter I certify that all parties have been served with a complete and true copy of the responses with the exception of diskettes. The responses to the data request of LG&E and KU require two diskettes that have been included only in the following: the original supplied to the Commission, the copy provided to John Wolfram and to Robert Rosenberg on behalf of LG&E and KU, Mike Kurtz, Mike Laros and David Barberie.

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth E. Blackford".

Elizabeth E. Blackford  
Assistant Attorney General  
1024 Capital Center Drive, Suite 200  
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(502) 696-5453  
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cc: Mike Beer  
Linda Portasik  
Kendrick Riggs  
John Wolfram  
Mike Kurtz  
Mike Laros  
David Barberie





Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

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1. In reference to Dr. Weaver's statement at page 10, line 22 that factors other leverage affect risk, indicate the five most important other factors that affect risk.

Answer:

A discussion of risk, as it relates to the rate of return is provided in Appendix II, page 3 beginning at line 10 and continuing through page 4, line 12. As is indicated in Appendix II, page 3 on line 12, "Risk ... is caused by any phenomenon which may result in the actual future return being less than the return anticipated when the investment was made." Categories of risk are provided on lines 15 through 19, page 3, of Appendix II. Since it is caused by the occurrence of any item, some of which can be controlled or partially controlled, it is not possible to rank risk exposure. For example, the occurrence of an ice storm that effects a company's distribution is an important source of risk to a company located in an area where ice storms occur and that has dense vegetation but less important to a company located where ice storms almost never occur and where there is little vegetation.

Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
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Initial Requests for Information

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2. In reference to Dr. Weaver's discussion of KU's common equity ratio at pages 12-14:
- a. Explain what Dr. Weaver means when he states "provided that the same amount of equity is repurchased" at page 12, line 13.
  - b. Explain what Dr. Weaver means when he states "to purchase equity from the company's owners" at page 14, line 8.
  - c. Explain the calculation on page 12, line 13 and indicate the source of the data.

Answer:

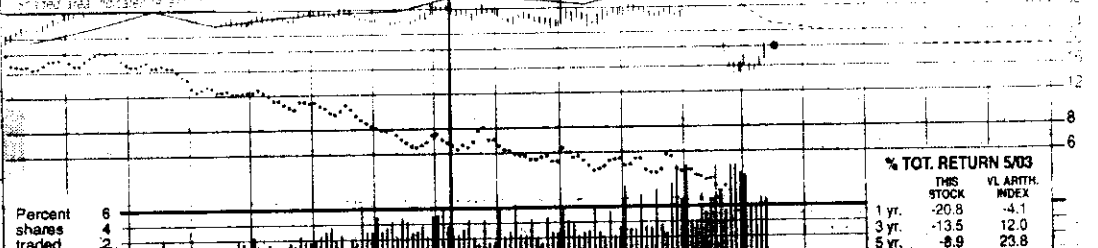
- a. The reference used the capitalization from the Barrington-Wellesley Group, Inc. Report, page V-19, May 22, 2003 filing for the year 2002 to calculate that if equity were \$106.7 million lower and leveraged items were \$106.7 million higher, the referenced capital structure would contain 50% equity. The way to accomplish that would be to issue debt and use the proceeds to repurchase equity.
- b. The company's owners possess the equity so in reference to item a, the equity would have to be purchased from its owners.
- c. See the response to a above and the calculation provided in parentheses on line 13, page 12.





RECENT PRICE	20.02	P/E RATIO	12.9 (Trailing: 17.7 Median: 14.0)	RELATIVE P/E RATIO	0.77	DIV'D YLD	5.0%	VALUE LINE	697
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<b>TIMELINESS</b>	<b>3</b>	Rated 100%	High	36.4	36.2	32.9	31.6	32.9	34.4	34.9	32.4	37.8	33.2	27.1	20.6	Target Price Range
			Low	29.4	31.3	26.4	27.3	27.5	26.8	28.0	25.2	25.8	27.5	14.3	15.0	2006 2007 2008
<b>SAFETY</b>	<b>3</b>	Rated 100%	<div> <div>LEGENDS</div> <div>WPL Holdings</div> <div>Alliant Energy</div> </div>													
<b>TECHNICAL</b>	<b>2</b>	Rated 100%	<div> <div>100% Coverage</div> <div>Dividend Yield: 3.4%</div> <div>Dividend Payout Ratio: 31.4%</div> <div>Dividend Growth Rate: 3.4%</div> </div>													
<b>BETA</b>	<b>1.00</b>	Rated 100%	<div> <div>Options: 65</div> </div>													



Alliant Energy, formerly called Interstate Energy Corporation, was formed on April 21, 1998 through the merger of WPL Holdings, IES Industries, and Interstate Power. WPL stockholders received one share of Interstate Energy stock for each WPL share, IES stockholders received 1.14 Interstate Energy shares for each IES share, and Interstate Power stockholders received 1.14 Interstate Energy shares for each Interstate Power share. Data prior to 1998 are for WPL Holdings only and are not comparable with Alliant Energy data.

**CAPITAL STRUCTURE** as of 3/31/09  
Total Debt \$3200.2 mil. Due in 5 Yrs \$1189.8 mil.  
LT Debt \$2659.9 mil. LT Interest \$164.2 mil.  
(LT interest earned: 1.9x)  
Pension Assets 12/02 \$466.7 mil. Oblg. \$606.5 mil.  
Pfd Stock \$205.1 mil. Pfd Div'd \$11.2 mil.  
449,765 shs. \$100 par; 6,599,000 shs. \$25. par;  
1,127,787 shs. \$50 par.  
**Common Stock** 92,778,682 shs. as of 4/30/03  
**MARKET CAP:** \$1.9 billion (Mkt Cap)

	2000	2001	2002
% Change Retail Sales (B&W)	+1.2	+3.3	+4.2
Avg. Indust. Use (MMBtu)	4,721	4,412	4,233
Avg. Indust. Prices per MMBtu (\$)	3.83	4.38	4.28
Closely at Hand (Kil)	5188	5153	5008
Annual Load-Summer Ratio	5397	5677	5729
Peak Load Factor (%)	67.3	73.5	+1.8
% Change Customers (yr-end)	+1.1	17	

67%	72%	84%	92%	100%	NMF	92%	81%
<b>BUSINESS:</b> Alliant Energy, formerly named Interstate Energy, is a holding company formed through the merger of WPL Holdings, IES Industries, and Interstate Power. Supplies elect. (63% of revs.); gas (18%); and other services (19%) in Wisconsin, Iowa, Minnesota, & Illinois. Revs. by state: WI, 44%; IA, 50%; MN, 44%; IL, 2%. Elected new Int'l. board mem. 50% control 21%; 10% each Wisconsin, Minnesota, Iowa, & Illinois.							

85%	NAF	67%	67%	All Divs to Net Prof	85%
<p>9% Other, 4% Fuel sources, 02 coal &amp; gas, 57% nuclear, 15% other, 1% purals, 27%. Fuel costs 43% of revs, 02 deprec, rate: 3.4%. <b>Earth products:</b> 12 yrs. Has 8,970 emp's, 55,476 com. stocks. <b>Chairman, Pres. &amp; CEO:</b> Brent B. Davis, Jr. <b>Off:</b> WI: 444-4444. <b>444 N. Belmont Lane, P.O. Box 77,007, Madison, WI 53707-0077. Tel:</b> 608-459-3361. <b>Internet:</b> <a href="http://www.alliant-energy.com">www.alliant-energy.com</a>.</p>					

	Annual Rates	Paid	Per Share	Dividend Yield
Common Stock	\$1.00	\$1.00	\$1.00	1.00%
Preferred Stock	\$1.00	\$1.00	\$1.00	1.00%
Earnings	\$1.00	\$1.00	\$1.00	1.00%
Dividends	\$1.00	\$1.00	\$1.00	1.00%

Calendar	Q1	Q2	Q3	Q4	Full Year
Year	Mar. 31	Jun. 30	Sep. 30	Dec. 31	
2000	574.1	522.9	663.2	698.8	2459.0
2001	852.7	811.8	666.3	646.5	2777.3
2002	608.6	570.9	709.4	379.8	2668.7
2003	895.8	680	780	824.2	3180
2004	720	700	800	820	3040

Calendar	EARNINGS PER SHARE <sup>A</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
2000	.56	.23	.91	.77	2.47
2001	.42	.29	.78	.93	2.42
2002	.11	.07	.49	.51	1.18
2003	.06	.25	.60	.64	1.55
2004	.10	.27	.62	.66	1.65

Calendar	QUARTERLY DIVIDENDS PAID <sup>a</sup>				Full Year
	Mar.31	Jun.30	Sep.30	Dec.31	
1999	.50	.50	.50	.50	2.00
2000	.50	.50	.50	.50	2.00
2001	.50	.50	.50	.50	2.00
2002	.50	.50	.50	.50	2.00

Alliant Energy is adding capacity to cover rising customer demand. Given both an expected 1.5-2.0% rate increase in energy prices and a relatively narrow margin, the company needed new capacity. As such, it acquired a 208-megawatt unit earlier this year and plans to add 100 mw of renewable energy by year-end 2004 after rejecting bids for a 500-mw gas-fired plant. It began building the unit near the facility, which will cost about \$400 million; is targeted to go on line next year. In addition, the company has an eight-year option to buy the entire output of Calpine's 450-mw peaking unit, which is scheduled for operation in mid-2004. As additional generation is needed, LNT will either buy or build the necessary power, depending on cost considerations.

The company is divesting nonstrategic assets. In April, it sold its Australian investment for \$365 million, which includes a debt repayment of \$150 million. After taxes, the sale resulted in net cash proceeds of \$170 million, which will be applied to debt reduction. LNT is also pursuing the sale of its oil and gas business, its

affordable housing investment, and its water operations. These enterprises have a book value of modest debt of about \$900 million, which they are likely to use to promote the sale of assets to ensure long-term viability and don't fit with management's core strategy. Their assets will allow them to reduce or even eliminate their debt holdings in the near future, says the analyst.

We will see improved earnings this year. The company will benefit from two electric and gas rate hikes totaling \$103.2 million and from higher energy sales. Too, Brazilian operations will probably suffer a lesser loss than they did in 2002, because of higher energy usage. Thus, despite an increase in shares outstanding, we estimate a 31% rise in 2003 earnings, to \$1.55 a share, and a small gain next year. The yield is a full percentage point above the industry norm. And based on our forecast of improved earnings over the next 3 to 5 years, dividend growth prospects over the same period exceed those of the group. Income-oriented investors might take a look here.

Arthur H. Medalie

July 4, 2003



# CINERGY NYSE-CIN

37.38

P/E RATIO 14.1

(Training 15.3 Median 14.0)

RELATIVE P/E RATIO 0.84

DIVID 5.0%

VALUE LINE

703

Target Price Range 2006 2007 2008

TIMELINESS 3

SAFETY 2

TECHNICAL 3

BETA

2006-08 PROJECTIONS

Price Gain Return  
High 50 (+35%) 12%  
Low 40 (+5%) 7%

Insider Decisions

	A	S	O	N	D	J	F	M	A
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	3Q2002	4Q2002	1Q2003	Percent
to Buy	128	164	163	9
to Sell	137	111	108	6
Mid (900)	100544	104845	112384	3

Cinergy was formed on October 24, 1994 through the merger of Cincinnati Gas & Electric and PSI Resources. Each common share of Cincinnati Gas & Electric was exchanged for 1.00 share of Cinergy, while each common share of PSI Resources was exchanged for 1.023 Cinergy shares. Pre-merger data are figures for Cincinnati Gas & Electric only and are not comparable to Cinergy data.

CAPITAL STRUCTURE as of 3/31/03

Total Debt \$4623.5 mill. Due in 5 Yrs \$2374.5 mill.  
LT Debt \$3977.0 mill. LT Interest \$209.0 mill. (LT interest earned: 3.8%)  
Pension Assets-1202 \$756.5 mill. Oblig.-\$1314.9 mill.  
Pfd Stock \$371.5 mill. Pfd Div'd \$24.7 mill.  
552,451 shs. 3.5% to 6.875% (\$100 par), callable at \$100 to \$108 a sh.; 309,544 shs. 4.16% to 4.32% \$25 par. call. at \$25; \$308.2 mill. preferred trust securities.

Common Stock 175,376,919 shs.  
MARKET CAP: \$6.6 billion (Large Cap)

ELECTRIC OPERATING STATISTICS

	2000	2001	2002
% Change Retail Sales (KWH)	+3.8	-1.0	+8
Avg. Indust. Use (MWH)	2880	2751	2701
Avg. Indust. Revs. per MWH (\$)	3.79	4.10	4.01
Capacity at Peak (MW)	10996	11083	11249
Peak Load, Summer (MW)	10141	11091	11133
Annual Load Factor (%)	63.8	NA	NA
% Change Customers (yr-end)	+2.0	+1.3	+1.8

Fixed Charge Cov. (%) 365 328 282

ANNUAL RATES	2000	2001	2002
of change (per sh)	14.0%	25.0%	22.0%
Revenues	2.6%	3.0%	3.0%
"Cash Flow"	9%	2.0%	3.0%
Earnings	1.0%	5%	1.0%
Dividends	1.0%	5%	1.0%
Book Value	1.0%	2.5%	1.0%

QUARTERLY REVENUES (\$ mil.)

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	1583	1770	2300	2789	8422
2001	3707	3642	3324	2250	12923
2002	2192	2471	3880	3417	11960
2003	1282	1320	1800	1658	6060
2004	1310	1350	1830	1690	6180

EARNINGS PER SHARE

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	.87	.47	.58	.58	2.50
2001	.75	.51	.60	.69	2.75
2002	.58	.27	.78	.59	2.22
2003	.80	.45	.80	.60	2.65
2004	.72	.50	.85	.68	2.75

QUARTERLY DIVIDENDS PAID

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
1999	.45	.45	.45	.45	1.80
2000	.45	.45	.45	.45	1.80
2001	.45	.45	.45	.45	1.80
2002	.45	.45	.45	.45	1.80
2003	.46	.46	.46	.46	1.84

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Revenues per sh	34.80
19.89	18.54	19.23	20.57	27.59	37.04	37.36	52.98	81.07	70.91	34.20	34.35	5.35	"Cash Flow" per sh	6.00
3.87	3.13	3.98	3.99	4.75	4.02	4.34	4.87	5.15	4.59	5.52	5.35	2.75	Earnings per sh	3.05
2.16	1.30	2.22	2.19	2.30	1.97	2.10	2.50	2.75	2.22	2.85	2.75	1.88	Div'd Decl'd per sh	2.00
1.68	.72	1.72	1.74	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Cap'l Spending per sh	2.95
2.26	3.29	2.06	2.05	2.08	2.32	2.43	3.27	5.31	5.08	4.25	3.80	22.05	Book Value per sh	25.40
17.25	15.56	16.17	16.39	16.10	16.02	16.70	17.36	18.45	19.53	21.00	22.05	179.80	Common Shs Outst'g	187.90
88.06	155.20	157.67	157.68	157.74	158.66	158.92	158.97	159.40	168.88	177.10	179.80	15.0	Avg Ann'l P/E Ratio	15.0
12.5	11.9	11.9	14.1	14.9	17.8	14.2	11.0	11.7	15.0	15.0	15.0	1.00	Relative P/E Ratio	1.00
74	80	88	86	92	81	72	80	82	82	82	82	4.4%	Avg Ann'l Div'd Yield	4.4%
6.2%	7.4%	6.5%	5.6%	5.3%	5.2%	6.1%	6.6%	5.6%	5.4%	5.4%	5.4%			
1751.7	2924.2	3031.4	3242.7	4352.8	5876.3	5937.9	8422.0	12923	11960	6060	6180	6540	Revenues (\$mill)	6540
214.0	226.1	378.0	369.0	472.0	318.1	340.8	404.1	446.8	364.2	485	515	595	Net Profit (\$mill)	595
31.7%	40.2%	36.7%	37.2%	34.5%	26.9%	38.0%	38.4%	36.4%	30.2%	36.0%	36.0%	36.0%	Income Tax Rate	36.0%
3.1%	6.2%	2.7%	2.0%	1.2%	5%	1.2%	2.0%	7.3%	5.9%	5.0%	4.0%	3.0%	AFUDC % to Net Profit	3.0%
49.7%	48.5%	46.3%	47.7%	44.2%	49.7%	52.1%	50.2%	52.1%	52.7%	50.0%	48.0%	43.0%	Long-Term Debt Ratio	43.0%
41.3%	43.1%	46.6%	48.6%	52.2%	48.5%	46.3%	48.2%	42.6%	42.5%	45.5%	47.5%	53.0%	Common Equity Ratio	53.0%
3678.3	566.5	5467.5	5313.7	4868.1	5238.3	5735.6	5728.2	6907.4	7745.3	8173	8315	9020	Total Capital (\$mill)	9020
3785.6	613.2	6251.1	6289.6	6297.1	6344.5	6417.5	6630.4	8236.9	8648	8960	9140	9200	Net Plant (\$mill)	9200
7.9%	8.9%	8.7%	11.6%	7.7%	7.7%	7.7%	8.4%	7.9%	6.1%	7.5%	7.5%	8.0%	Return on Total Cap'l	8.0%
11.6%	12.9%	13.3%	17.4%	12.1%	12.4%	14.2%	13.5%	9.3%	12.0%	12.0%	12.0%	11.5%	Return on Shr. Equity	11.5%
12.4%	13.6%	13.4%	18.1%	12.3%	12.6%	14.5%	15.0%	10.3%	12.5%	12.5%	12.5%	12.0%	Return on Com Equity	12.0%
2.8%	3.1%	2.8%	6.9%	1.1%	1.9%	4.1%	5.3%	1.9%	4.0%	4.0%	4.0%	4.0%	Retained to Com Eq	4.0%
80%	79%	81%	63%	91%	86%	72%	65%	65%	71%	70%	70%	67%	All Div'ds to Net Prof	67%

**BUSINESS:** Cinergy Corp. is a holding company formed through the merger of Cincinnati Gas & Electric and PSI Resources. Supplies elec. (85% of revs.) to 1,500,000 customers, natural gas (15%) to 456,000 customers, in Ohio, Kentucky, and Indiana. Elect. (Gas) revs. resid. 43% (66%); comm. 28% (28%); indust. 25% (4%); other 4% (4%). The primary metal and chemical industries

Cinergy's capital budget soared in 2001 and will remain high through 2003, largely because of the need to comply with the U.S. Environmental Protection Agency's directive to reduce nitrogen oxide emissions at the company's coal-fired plants. EPA had filed suit against CIN for noncompliance with The Clean Air Act and seeks \$27,500 per day for each violation since March, 2000. To meet EPA requirements, management converted its Noblesville coal-burning unit to a gas burner and is making similar changes at nine small coal plants. The bulk of the \$800 million outlays to lower pollution and upgrade nitrogen oxide reduction technology is near completion and should be finalized next year. Construction spending will then decline, and CIN should be able to induce the EPA to drop its lawsuit.

The company has lowered its rate request in Indiana by \$25 million, to \$200 million. The revised amount reflects an updated evaluation of the utility's needs. The application seeks recovery of the \$376 million purchase of two natural gas-fired units from CIN's unregulated affiliate, the repowering of the Noblesville

unit, and improvements to the transmission system. In addition, some \$68 million is being sought for environmental expenditures. Under Indiana law, a portion of this amount will be phased in prior to 2004 for preapproved projects. A regulatory order on the petition is due in February. Earnings are on an upward path. Positive include a reduced headcount resulting from last year's retirement program, a likely 1-2% rise in retail energy sales, and a full year of the May, 2002 gas rate increase in Ohio. But these gains will be pared somewhat by the dilutive effect of more common shares outstanding and higher pension and medical costs. On balance, we look for 2003 earnings of \$2.65 a share. A likely rate hike in Indiana suggests improved results next year.

**Income-oriented investors might consider these shares.** The yield is a full percentage point above the industry norm. Too, a reduction in environmental spending and our projection of steady earnings growth to 2006-2008 should allow increased dividends at a rate a cut above that of the group.

Arthur H. Medalie  
July 4, 2003

(A) EPS diluted. Excl. extraord. gains (losses): '93, (\$2.55); '96, (12c); '97, (69c); '98, (32c); '99, 43c; '03 15c. Next egs. rpt. due late July.  
(B) Divs historically paid mid-Feb., mid-May

mid-Aug., and mid-Nov. Div'd reinvest. plan avail. (C) Incl. net chgs. in '02, \$6.41/sh.  
(D) Rate base net original cost. Allowed on com. eq. Ohio - 93 elect. 12.9% Indiana in

'96: 11.0%. Earned avg. com. eq. '02: 11.9%. Regul. Cim.: Above Avg. (E) Pro forma.  
(F) In mill., adjust. for split.

Company's Financial Strength  
Stock's Price Stability 95  
Price Growth Persistence 25  
Earnings Predictability 90

To subscribe call 1-800-833-0046.

Item 3, Page 5

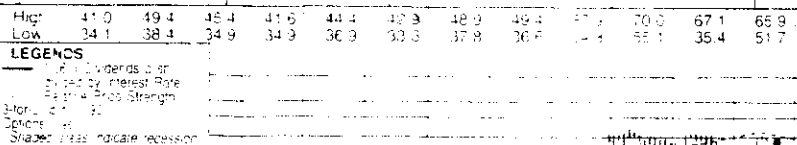




# DOMINION RES. NYSE:

RECENT PRICE 60.51 P/E RATIO 13.2 (Training Media) RELATIVE P/E RATIO 0.75 DIVD YLD 4.3% VALUE LINE 161

**TIMELINESS** 4 Lowered 9/5/03  
**SAFETY** 2 Raised 9/11/98  
**TECHNICAL** 3 Lowered 9/5/03  
**BETA** 0.5 (1.00 = Market)

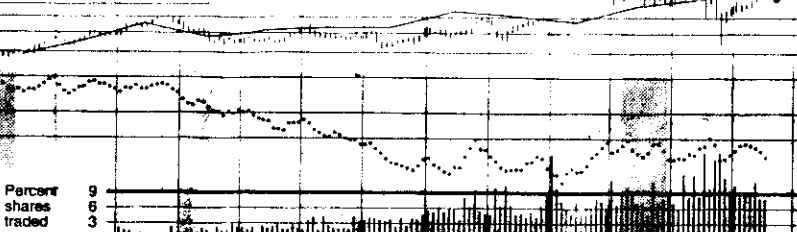


Target Price Range  
 2006 2007 2008

**2006-08 PROJECTIONS**  
 Price 85  
 Gain (+40%)  
 Low 65 (+5%)  
 Ann'l Total Return 12%  
 6%

**Insider Decisions**  
 O N D J F M A M J  
 to Buy 1 0 0 0 0 0 1 0 0  
 to Sell 0 0 0 0 0 1 1 0 0  
 to Hold 0 0 0 0 0 0 0 0 0

**Institutional Decisions**  
 3Q2002 4Q2002 1Q2003  
 to Buy 243 301 283  
 to Sell 202 156 174  
 Net Buy 45 145 109



% TOT. RETURN 703	THIS STOCK	VL. ANTHL INDEX
1 yr.	5.7	25.8
3 yr.	50.5	18.7
5 yr.	82.5	40.9

1997	1998	1999	2000	2001	2002	2003	2004	VALUE LINE PUB. INC.	06-08
22.58	22.72	24.52	22.82	23.83	23.14	26.37	26.05	26.37	26.72
6.01	6.36	5.88	6.08	6.38	6.04	6.61	6.33	6.00	6.44
3.03	3.01	2.76	2.75	2.94	2.66	3.12	2.81	2.45	2.65
1.99	2.07	2.15	2.23	2.31	2.40	2.48	2.55	2.58	2.58
5.87	5.82	6.12	5.19	4.58	4.37	4.24	3.83	3.28	2.69
20.96	21.91	22.67	23.41	24.41	25.22	26.38	26.60	27.17	26.84
143.99	147.17	150.91	154.79	158.85	163.84	168.12	172.41	176.41	181.22
9.6	9.5	10.5	10.9	11.3	14.3	14.3	13.8	15.4	14.8
64	79	79	81	72	87	84	91	1.03	.93
6.9%	7.2%	7.4%	7.4%	7.0%	6.3%	5.6%	6.6%	6.9%	6.6%

**CAPITAL STRUCTURE as of 3/31/03**  
 Total Debt \$17215.0 mill. Due in 5 Yrs \$7136.0 mill.  
 LT Debt \$15104.0 mill. LT Interest \$1000.0 mill.  
 Incl. \$1997.0 mill. mandatorily redeemable preferred securities of subsidiary trusts.  
 (LT interest earned: 3.2x)  
 Leases, Uncapitalized Annual rentals \$94.0 mill.  
 Pension Assets-12/02 \$3.07 bill. Oblig. \$2.80 bill.  
 Pfd Stock \$257.0 mill. Pfd Div'd \$16.0 mill.  
 1,340,140 shs. \$4.04-\$7.05, \$100 liq. pref., redeemable at \$101.00-\$112.50/sh.; 2,500,000 var. rate Money Market Pfd. shs. Excl. pfd. due within 1 year. Common Stock 310,803,869 shs. as of 4/30/03  
 MARKET CAP: \$19 billion (Large Cap)

ELECTRIC OPERATING STATISTICS	2000	2001	2002
% Change Retail Sales (DNR)	+4.3	-1.2	+4.9
Av. Indust. Use (MW)	14390	13904	14524
Av. Indust. Rate per kWh (¢)	4.06	4.40	NA
Capacity at Peak (MW)	17728	18000	18080
Peak Load System (MW)	15464	16500	17084
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-nd)	1.9	1.8	+2.1

**BUSINESS:** Dominion Resources, Inc. (DRI) is a holding company for Virginia Power, which serves 2.2 million customers in Virginia and northeastern NC. Acquired Consolidated Natural Gas (1.7 million customers in OH, PA, WV) 1/00. Utility operations include independent power production, oil & gas production. Electric revenue breakdown: 02: residential, 47%; commercial, 30%; industrial, 10%; other, 13%. Generating sources: 02: coal, 43%; nuclear, 32%; oil, 4%; other, 2%; purchased, 19%. Fuel costs: 52% of revenues. 02: depreciated, 4.2%; 1999: 17,000 employees. 350,000 common stockholders. Chairman, President & CEO: Thomas E. Capps, Jr. Virginia. Address: P.O. Box 28832, Richmond, VA 23261-6532. Telephone: 804-619-2000, internet: www.drm.com.

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Quarterly Earnings	2000	2001	2002	2003
Q1	0.43	0.43	0.43	0.43
Q2	0.43	0.43	0.43	0.43
Q3	0.43	0.43	0.43	0.43
Q4	0.43	0.43	0.43	0.43

**Domination Resources' earnings** are likely to decline in 2003. On the positive side, thanks to higher commodity prices, earnings from oil and gas exploration and production business should rise, despite flatish production. In addition, DRI's cost-reduction program is bearing fruit. But the rise in pension expenses will outweigh these cost savings, and the company will lose \$85 million in tax credits that it recorded last year. Sales of common stock in late 2002 and May of 2003 will be dilutive to share earnings. Furthermore, we will reduce our 2003 estimate once DRI's purchase of a nonutility power plant (in connection with the buyout of an above-market contract) closes, probably in the fourth quarter. The cost of buying out the contract will reduce after-tax earnings by \$65 million-\$85 million, but we will not include this charge in our figures until the deal has closed. (DRI is excluding it from its 2003 earnings guidance of \$4.60-\$4.80.) We expect an earnings recovery in 2004. Thanks largely to two major projects that are scheduled for commercial operation in the first quarter and second half of 2004, oil and gas production should rise by

10%-15%. Although commodity prices might not reach the very levels attained in 2002, DRI's earnings should improve. A dividend hike appears more and more likely. Such a move hasn't occurred since 1994. Management wants to strengthen DRI's credit profile first, and make sure its cash flows are adequate. We conservatively estimate no dividend increase until 2005, but we don't rule one out next year. We also lowered the projected dividend-growth rate to 2006-2008. By utility standards, this untimely stock offers an average yield and average P/E to 8-year total return potential. DRI has avoided most of the problems that have afflicted many companies in the industry, but its strengths appear to be reflected in the share price.

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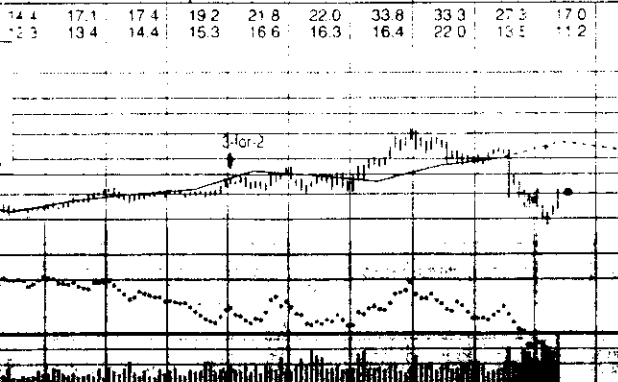
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(A) Cash received from operations. (B) Cash paid for operations. (C) Cash paid for capital expenditures. (D) Cash paid for acquisitions. (E) Cash paid for debt. (F) Cash paid for equity. (G) Cash paid for other. (H) Cash paid for interest. (I) Cash paid for taxes. (J) Cash paid for dividends. (K) Cash paid for other. (L) Cash paid for other. (M) Cash paid for other. (N) Cash paid for other. (O) Cash paid for other. (P) Cash paid for other. (Q) Cash paid for other. (R) Cash paid for other. (S) Cash paid for other. (T) Cash paid for other. (U) Cash paid for other. (V) Cash paid for other. (W) Cash paid for other. (X) Cash paid for other. (Y) Cash paid for other. (Z) Cash paid for other. (AA) Cash paid for other. (AB) Cash paid for other. (AC) Cash paid for other. (AD) Cash paid for other. (AE) Cash paid for other. (AF) Cash paid for other. (AG) Cash paid for other. (AH) Cash paid for other. (AI) Cash paid for other. (AJ) Cash paid for other. (AK) Cash paid for other. (AL) Cash paid for other. (AM) Cash paid for other. (AN) Cash paid for other. (AO) Cash paid for other. (AP) Cash paid for other. (AQ) Cash paid for other. (AR) Cash paid for other. (AS) Cash paid for other. (AT) Cash paid for other. (AU) Cash paid for other. (AV) Cash paid for other. (AW) Cash paid for other. (AX) Cash paid for other. (AY) Cash paid for other. (AZ) Cash paid for other. (BA) Cash paid for other. (BB) Cash paid for other. (BC) Cash paid for other. (BD) Cash paid for other. (BE) Cash paid for other. (BF) Cash paid for other. (BG) Cash paid for other. (BH) Cash paid for other. (BI) Cash paid for other. (BJ) Cash paid for other. (BK) Cash paid for other. (BL) Cash paid for other. (BM) Cash paid for other. (BN) Cash paid for other. (BO) Cash paid for other. (BP) Cash paid for other. (BQ) Cash paid for other. (BR) Cash paid for other. (BS) Cash paid for other. (BT) Cash paid for other. (BU) Cash paid for other. (BV) Cash paid for other. (BW) Cash paid for other. (BX) Cash paid for other. (BY) Cash paid for other. (BZ) Cash paid for other. (CA) Cash paid for other. (CB) Cash paid for other. (CC) Cash paid for other. (CD) Cash paid for other. (CE) Cash paid for other. (CF) Cash paid for other. (CG) Cash paid for other. (CH) Cash paid for other. (CI) Cash paid for other. (CJ) Cash paid for other. (CK) Cash paid for other. (CL) Cash paid for other. (CM) Cash paid for other. (CN) Cash paid for other. (CO) Cash paid for other. (CP) Cash paid for other. (CQ) Cash paid for other. (CR) Cash paid for other. (CS) Cash paid for other. (CT) Cash paid for other. (CU) Cash paid for other. (CV) Cash paid for other. (CW) Cash paid for other. (CX) Cash paid for other. (CY) Cash paid for other. (CZ) Cash paid for other. (DA) Cash paid for other. (DB) Cash paid for other. (DC) Cash paid for other. (DD) Cash paid for other. (DE) Cash paid for other. (DF) Cash paid for other. (DG) Cash paid for other. (DH) Cash paid for other. (DI) Cash paid for other. 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(WK) Cash paid for other. (WL) Cash paid for other. (WM) Cash paid for other. (WN) Cash paid for other. (WO) Cash paid for other. (WP) Cash paid for other. (WQ) Cash paid for other. (WR) Cash paid for other. (WS) Cash paid for other. (WT) Cash paid for other. (WU) Cash paid for other. (WV) Cash paid for other. (WX) Cash paid for other. (WY) Cash paid for other. (WZ) Cash paid for other. (XA) Cash paid for other. (XB) Cash paid for other. (XC) Cash paid for other. (XD) Cash paid for other. (XE) Cash paid for other. (XF) Cash paid for other. (XG) Cash paid for other. (XH) Cash paid for other. (XI) Cash paid for other. (XJ) Cash paid for other. (XK) Cash paid for other. (XL) Cash paid for other. (XM) Cash paid for other. (XN) Cash paid for other. (XO) Cash paid for other. (XP) Cash paid for other. (XQ) Cash paid for other. (XR) Cash paid for other. (XS) Cash paid for other. (XT) Cash paid for other. (XU) Cash paid for other. (XV) Cash paid for other. (XW) Cash paid for other. (XX) Cash paid for other. (XY) Cash paid for other. (XZ) Cash paid for other. (YA) Cash paid for other. (YB) Cash paid for other. (YC) Cash paid for other. (YD) Cash paid for other. (YE) Cash paid for other. (YF) Cash paid for other. (YG) Cash paid for other. (YH) Cash paid for other. (YI) Cash paid for other. (YJ) Cash paid for other. (YK) Cash paid for other. (YL) Cash paid for other. (YM) Cash paid for other. (YN) Cash paid for other. (YO) Cash paid for other. (YP) Cash paid for other. (YQ) Cash paid for other. (YR) Cash paid for other. (YS) Cash paid for other. (YT) Cash paid for other. (YU) Cash paid for other. (YV) Cash paid for other. (YW) Cash paid for other. (YX) Cash paid for other. (YY) Cash paid for other. (YZ) Cash paid for other. (ZA) Cash paid for other. (ZB) Cash paid for other. (ZC) Cash paid for other. (ZD) Cash paid for other. (ZE) Cash paid for other. (ZF) Cash paid for other. (ZG) Cash paid for other. (ZH) Cash paid for other. (ZI) Cash paid for other. (ZJ) Cash paid for other. (ZK) Cash paid for other. (ZL) Cash paid for other. (ZM) Cash paid for other. (ZN) Cash paid for other. (ZO) Cash paid for other. (ZP) Cash paid for other. (ZQ) Cash paid for other. (ZR) Cash paid for other. (ZS) Cash paid for other. (ZT) Cash paid for other. (ZU) Cash paid for other. (ZV) Cash paid for other. (ZW) Cash paid for other. (ZX) Cash paid for other. (ZY) Cash paid for other. (ZZ) Cash paid for other.

**TIMELINESS** 5  
**SAFETY** 3  
**TECHNICAL** 3  
**BETA** 0.30

**LEGENDS**  
1.18 x Dividends on share divided by interest rate  
Relative Price Strength  
3 for 2 split 5.90  
1 for 2 split 9.92  
3 for 2 split 1.98  
Dividends Yes  
Shaded area indicates recession



**Target Price Range**  
2006 2007 2008

**% TOT. RETURN 503**  
THIS STOCK VS. S&P 500  
1 yr. -34.1  
3 yr. -25.2  
5 yr. 15.0

**2006-08 PROJECTIONS**

	Price	Gain	Ann'l Total Return
High	25	(+55%)	16%
Low	18	(+10%)	8%

**Insider Decisions**

	A	S	O	N	D	J	F	M	A
to Buy	0	0	1	1	1	1	0	3	1
Options to Sell	0	0	0	0	0	0	0	0	0

**Institutional Decisions**

	30202	40202	10202
to Buy	89	92	85
to Sell	75	94	81
Net Buy/Sell	14	-2	4

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
6.72	7.04	6.23	6.08	6.41	6.56	7.42	7.70	7.88	7.90	8.44	8.66	8.88	9.10	9.32	9.54	9.76
1.68	1.33	1.29	1.47	1.39	1.57	1.61	1.88	1.77	1.87	1.98	2.15	2.32	2.49	2.66	2.83	3.00
1.07	.89	.87	.98	.77	.89	.95	1.03	1.08	1.15	1.28	1.24	1.35	1.48	1.74	2.00	2.26
.61	.64	.66	.65	.72	.72	.75	.79	.83	.87	.91	.94	.94	.94	.94	.94	.94
.74	1.13	1.57	.95	.68	.36	.73	.59	.83	.88	.71	.66	1.06	2.38	3.80	5.22	6.64
6.81	6.06	6.56	6.88	6.92	6.44	6.62	7.03	7.28	7.55	8.09	8.58	9.20	9.90	10.60	11.30	12.00
140.02	139.69	153.47	155.27	155.27	155.27	155.27	160.43	160.05	159.01	166.20	161.26	167.80	173.77	179.30	184.83	190.36
7.1	8.6	8.2	8.5	12.4	13.1	14.9	13.0	13.6	13.8	13.7	15.1	13.7	16.6	15.4	16.8	18.2
.47	.71	.82	.83	.79	.79	.84	.85	.91	.86	.79	.79	.78	1.08	1.79	2.57	3.35
8.0%	8.4%	8.4%	8.2%	7.5%	6.2%	5.5%	5.9%	6.0%	5.5%	5.5%	6.0%	6.1%	6.8%	6.5%	6.7%	6.9%

**CAPITAL STRUCTURE** as of 3/31/03  
Total Debt \$2430 mill. Due in 5 Yrs \$981.3 mill.  
LT Debt \$2430 mill. LT Interest \$155.0 mill.  
Incl. \$292.4 mill. 8.125% mand. redeem. pref'd trust sec. (LT interest earned 2.2x)  
Pension Assets-12/02 \$268 mill. Oblig. \$266 mill.  
Pld Stock \$22.9 mill. Pld Div'd \$0.9 mill.  
Incl. 228,508 shs. 3.75% to 3.90%, call \$101 to \$103 per sh.; and 6.8 mill. shrs., mand. redeem., with voting rights for up to 4.9% of total vote.  
Common Stock 126,501,404 shs. c

(Excl. warrants: 31.6 mill. exer. at \$21 thru 2012.)  
**MARKET CAP: \$2.0 billion (Mld Cap)**

**ELECTRIC OPERATING STATISTICS**

	2000	2001	2002
% Change Retail Sales (KWH)	+1.7	-8	42.9
% Indust. Use (KWH)	2516	2400	2543
Av. Indust. Rate per KWH (¢)	4.58	5.02	5.10
Capacity at Peak (MW)	3194	3973	3700
Peak Load, Summer (MW)	2808	3045	3070
Annual Load Factor (%)	68.7	N/A	69.9
% Change Customers (yr-end)	+8	+4	+3

**ANNUAL RATES**

	2000	2001	2002
Rate of change (percent)	98.3	98.3	98.3
Flowage	2.0	2.0	2.0
Costs	2.0	2.0	2.0
Earnings	3.0	3.0	3.0
Dividends	3.0	3.0	3.0
Book Value	3.0	3.0	3.0

**QUARTERLY REVENUES \$ MIL**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	386.6	314.8	385.3	380.0	1466.7
2001	297.9	290.2	354.4	292.9	1135.4
2002	276.3	281.7	344.7	284.8	1187.5
2003	285.1	275	300	289.8	1150.9
2004	275	270	300	305	1150

**EARNINGS PER SHARE**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	.38	.26	.55	.30	1.49
2001	.49	.29	.69	.29	1.74
2002	.33	.36	.54	.21	.72
2003	.30	.20	.50	.25	1.25
2004	.30	.25	.40	.25	1.20

**QUARTERLY DIVIDENDS PAID**

Cal-ender	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
1999	.235	.235	.235	.235	.94
2000	.235	.235	.235	.235	.94
2001	.235	.235	.235	.235	.94
2002	.235	.235	.235	.235	.94
2003	.235	.235	.235	.235	.94

**BUSINESS:** DPL Inc., parent of The Dayton Power & Light Company, sells electricity in Dayton and west-central Ohio. Electricity sales breakdown in 2002: retail, 39%; contract, 23%; industrial, 10%; wholesale, 11%; other, 8%. Power costs 20% of rev.; labor costs, 6%; O&M exp. dep. rate, 3.3%; fuel cost, 25%; other, 35%. Gas pipeline distribution business, 100%. Has about 1,500 employees.

**DPL is performing well in the electric utility industry, but its stock price is depressed relative to its earnings. The company's financial performance is strong, with earnings per share of \$1.20 in 2003, up from \$0.72 in 2002. The company's stock price, however, is only \$16.18, which is a significant discount to its intrinsic value. This is due to a number of factors, including the company's high debt-to-equity ratio, its history of stock repurchases, and its relatively low dividend yield. Despite these challenges, DPL remains a solid investment for long-term investors.**

... and the company's corporate governance is being scrutinized. A number of issues are attracting attention, including the lack of adequate disclosure regarding the investment portfolio, the high turnover of CFO/Treasurers (six in the past five years), and several recent board resignations. The stock is untimely, though the dividend yield remains above-average.

**Terese S. Fabian**  
July 4, 2003

# DTE ENERGY CO. NYSE-DTE

RECENT PRICE 39.50

P/E RATIO 13.9 (Trailing: 12.2 Median: 11.0)

RELATIVE P/E RATIO 0.83

DIV YLD 5.2%

VALUE LINE 706

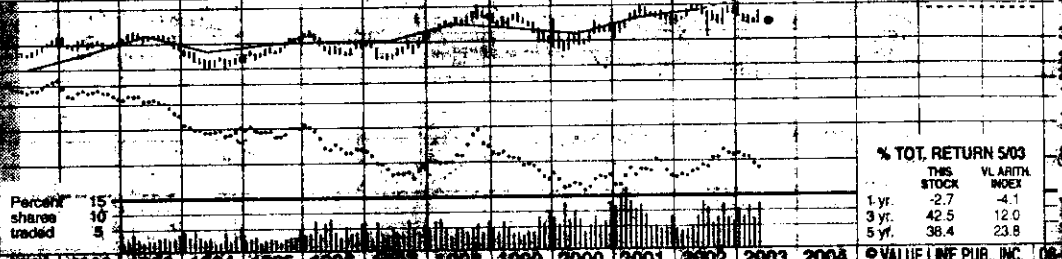
**TIMELINE**  
 4 Lowered 5/16/03  
 3 Lowered 10/5/01  
 3 Lowered 2/7/00  
**BETA** .60 (1.00 = Market)

**LEGENDS**  
 1st = Dividends per share  
 divided by interest rate  
 Relative Price Strength  
 Options: Yes  
 Shaded area indicates recession

**2000-08 PROJECTIONS**  
 Price 65  
 Gain (+65%)  
 Low 45 (+15%)  
 High 85

**Insider Decisions**  
 A S O N D J F M A  
 to Buy 0 0 0 0 0 0 0 0 0 0 0 0  
 to Sell 0 0 0 0 0 0 0 0 0 0 0 0  
 Options 0 0 0 0 0 0 0 0 0 0 0 0

**Institutional Decisions**  
 32202 42202 10202  
 to Buy 148 155 163  
 to Sell 106 112 123  
 Options 88302 91417 84564



1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	VALUE LINE PUB. INC.	06
79.47	21.13	22.94	22.94	21.44	24.29	24.18	24.29	25.05	25.92	26.10	26.10	26.10	26.10	26.10	26.10	26.10	26.10	Revenues per sh	45.15
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	"Cash Flow" per sh	8.50
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Earnings per sh	2.60
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Div'd Decl'd per sh	2.00
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	Cap'l Spending per sh	4.70
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Book Value per sh	28.40
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Operation Shs Outstg	100.50
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	Adj Ann'l P/E Ratio	11.0%
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Relative P/E Ratio	11.0%
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Adj Ann'l Div'd Yield	5.0%
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	Revenue (Small)	700
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Net Profit (Small)	60
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Income Tax Rate	40%
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	AFUDC % to Net Profit	4.0%
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Long-Term Debt Ratio	38.5%
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Common Equity Ratio	37.5%
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	Total Capital (Small)	1250
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Net Plant (Small)	9875
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Return on Total Cap'l	6.5%
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	Return on Str. Equity	12.0%
3.25	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	Return on Com Equity	11.0%
1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	Retained to Com Eq	5.0%
4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	All Div'ds to Net Prof	50%

**ELECTRIC OPERATING STATISTICS**  
 2000 2001 2002  
 % Change Retail Sales (RWS) +1.1 +1.1 +1.1  
 Avg. Indust. Use (MWH) 16090 14429 13569  
 Avg. Indust. Rate per KWH (¢) 5.27 5.36 5.15  
 Capacity at Peak (MW) 11053 11053 11050  
 Peak Load, Summer (MW) 10919 11800 11300  
 Annual Load Factor (%) NA NA NA  
 % Change Customers (net) +1.0 +1.0 +1.0

**ANNUAL RATES**  
 of change (per sh)  
 Revenues 6.0% 11.0% 3.0%  
 "Cash Flow" 2.0% 2.0% 4.0%  
 Earnings 2.0% 2.0% 4.0%  
 Dividends 2.0% 2.0% 4.0%  
 Book Value 2.0% 2.0% 4.0%

**Call-center**  
 2000 1675  
 2001 1675  
 2002 1675  
 2003 1675  
 2004 1675

**EARNINGS PER SHARE**  
 Mar.31 Jun.30 Sep.30 Dec.31 Full Year  
 2000 .81 .76 .73 .97 3.27  
 2001 .95 .60 .38 1.34 2.15  
 2002 1.24 .42 .96 1.21 3.83  
 2003 .64 .40 .61 1.20 2.85  
 2004 1.25 .43 .65 1.25 3.58

**QUARTERLY DIVIDENDS PAID**  
 Mar.31 Jun.30 Sep.30 Dec.31 Full Year  
 1999 .515 .515 .515 .515 2.06  
 2000 .515 .515 .515 .515 2.06  
 2001 .515 .515 .515 .515 2.06  
 2002 .515 .515 .515 .515 2.06  
 2003 .515 .515 .515 .515 2.06

**A** Shaded EPS: Excl. nonrecurring gains (years) '95 (22c); '96 (67c); '01, 2c '03  
 '02 gain on disc. ops. '03 44c '01 EPS don't  
 '02 Due to change in shares. Next earnings re-  
 port due late July. (B) Dividends historically  
 paid in mid-Jan., April, July, and Oct. Div'd  
 reinvestment plan available. (C) Incl. in-  
 tangibles in '02 \$4.9 bill. \$29.43 sh. (D) In-  
 mid. (E) Rate base. Net orig. cost. Rate allowed  
 on com. eq. incl. none specified gas.  
 11.6% earned on avg. com. eq. '02 13.2%  
 Regulatory Climate: Below Average

**BUSINESS:** DTE Energy Company is a holding company for The Detroit Edison Company, which supplies electricity in Detroit and a 7,600-square-mile area in southeastern Michigan, and Michigan Consolidated Gas (MichCon). Customers: 2.1 mil. electric, 1.3 mil. gas. Acq'd MCN Energy '01. Max. various nonutility ops. Owns 50% of Plug Power. Electric res. breakdown: '02 residential 35%, comm'l. 37%, ind'l. 17%, other, 11%. Generating sources: '02 coal, 64%; nuclear, 16%; other 3%; purchased, 17%. Fuel costs: 31% of revs. '02 reported deprec. rates: 3.4% elec., 3.6% gas. Has 11,000 employees, 109,000 com. stockholders. Chairman, Pres. & CEO, Anthony F. Earley, Jr. Inc. Mt. Address: 2000 Second Ave., Detroit, MI 48226-1279. Tel.: 313-235-4000. Internet: www.dteenergy.com

**We have cut our earnings estimates for DTE Energy.** March-quarter profits were well below our expectations, due in part to a \$0.10-a-share reserve for possibly uncollectible gas costs and two small, unusual charges that took \$0.14 off the bottom line. We include these three items in our presentation. DTE's goal of \$3.75-\$3.95 a share excludes them, though that figure was set before a problem with the company's tax-deferred annuities operation broke DTE high-yield credit. The private letter falling from the sky that it needs before it can sell some projects, as was its intent all along. It will curtail production at the facilities, which will reduce earnings by \$0.05-\$0.07 a share each month. The synfuels problem certainly makes earnings much tougher to estimate than usual. We have slashed our 2003 share-net estimate from \$3.95 to \$2.85, and our 2004 figure is now \$3.60, down from \$4.15 previously. Detroit Edison has filed a rate case. The utility's last base rate increase was 10 years ago. Certain costs, such as those for pensions and healthcare, are up sharply. Detroit Edison seeks a rate hike of \$416 million (8¢ based on an 11.5% return on

equity; a \$109 million, five-year surcharge to recover regulatory assets, including costs associated with customer choice in the state and environmental capital expenditures; a \$274 interim rate hike that would take effect at the start of 2004; and restoration of a fuel adjustment mechanism. The final order is due in the first half of 2004. Any rate changes would take effect for small commercial/industrial customers and residential customers only. After rate caps for these users expire at the end of 2004 and 2005, respectively, MichCon Gas will also file a rate request, probably by the end of the third quarter. Because MichCon is earning only a single-digit return on equity, it appears to have a strong case for an increase. Untimely DTE stock has lagged most utility issues lately. As a result, its yield is now about a percentage point above the industry average. That ought to provide reasonable compensation for investors to assume the risks associated with the synfuels business and the utilities' rate cases. Total-return potential to 2006-2008 is above average for the industry.

*Paul E. Debbas, CFA* July 4, 2003

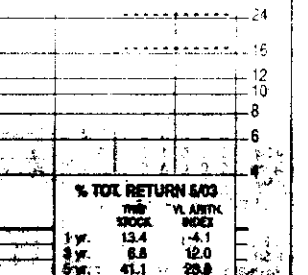
**Company's Financial Strength** B+  
**Stock's Price Stability** 100  
**Price Growth Persistence** 30  
**Earnings Predictability** 55

**To subscribe call 1-800-833-0046.**



## 07

	Target Price Range 2006	2007	2008
			40
			32



10	
8	
6	
4	
2	
0	

U. S. DEPARTMENT OF COMMERCE  
BUREAU OF ECONOMIC ANALYSIS  
WASHINGTON, D. C. 20540

	TRF STOCK	V. AMTK INDEX
1 yr.	13.4	4.1
3 yr.	6.8	12.0
5 yr.	41.1	28.8

2001	.32	.32	.32	.32	1.28	actively. (There is no rate adjustment clause in Missouri.) Due to rate moratoriums, average	return potential is below the industry average.
2002	.32	.32	.32	.32	1.28	however, the utility may not file a rate ap	
2003	.32	.32					

Paul E. Debbas, CFA July 4, 2003

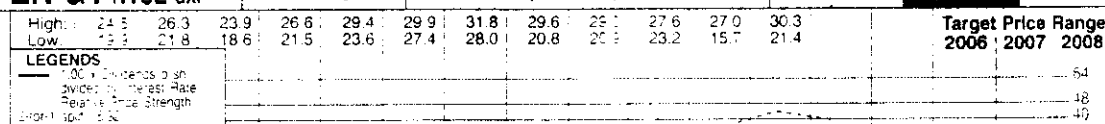
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FPL GROUP, INC. NYSE-FPL				RECENT PRICE	62.00	PE RATIO	12.6	(Trailing 159)	RELATIVE P/E RATIO	0.72	DIV'D YLD	4.0%	VALUE LINE	165		
TIMELINESS	4	Lower 31'00	High	38.4	41.0	39.1	46.5	48.1	50.0	72.6	61.2	73.0	71.6	65.3	68.1	Target Price Range
SAFETY	1	Lower 36'02	Low	32.0	35.5	27.4	34.1	41.5	47.5	56.1	41.1	36.4	51.2	45.0	53.6	2006 2007 2008
TECHNICAL	3	Lower 37'00	LEGENDS													
BETA	60	1.17	Options: Yes Shaded areas indicate recession													
2006-08 PROJECTIONS																
	Price	Gain	Ann'l Total													
High	85	(-35%)	11%													
Low	70	(+15%)	7%													
Insider Decisions																
to Buy				O	N	D	J	F	M	A	M	J				
to Sell				0	0	0	0	0	0	0	0	0				
Institutional Decisions																
to Buy				30282	42882	10280										
to Sell				242	261	241										
Net Buy/Sell				116161	114592	114919										
				Percent	15	10	5									
				shares	10	5										
				traded	5											

# GREAT PLAINS EN'GY NYSE-GXP

RECENT PRICE **29.42** P/E RATIO **14.7** (Trailing: 12.4 Median: 15.1) RELATIVE P/E RATIO **0.88** DIV'D YLD **5.6%** VALUE LINE **709**

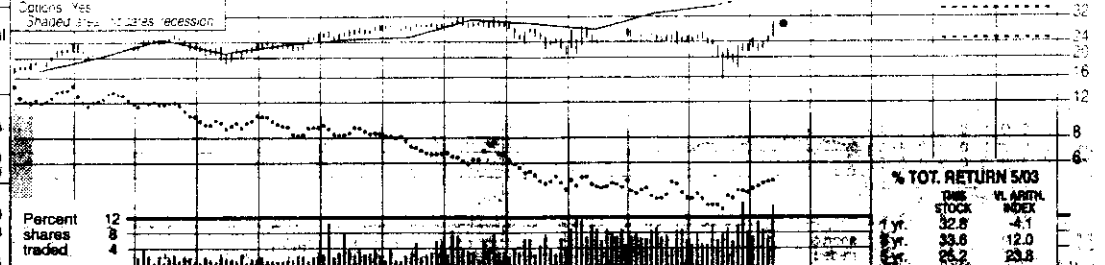
**TIMELINESS** 3 Lowered 4.4.03  
**SAFETY** 2 Raised 7.5.93  
**TECHNICAL** 3 Lowered 5.23.03  
**BETA** 1.01 = Market



**2006-08 PROJECTIONS**  
 Price Gain Ann'l Total  
 High 35 (+20%) 10%  
 Low 25 (-15%) 2%

**Insider Decisions**  
 to Buy 4 3 0 2 0 0 0 0 1  
 Options 0 0 0 0 0 0 0 0 0  
 to Sell 1 0 0 0 0 0 0 0 0

**Institutional Decisions**  
 30202 40282 10203  
 to Buy 26 99 98  
 to Sell 54 51 61  
 Held 16105 21047 21776



1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
11.38	11.90	11.82	12.29	13.33	12.97	13.85	14.03	14.31	14.80	14.47	14.31	14.50	14.02	12.81	12.51	12.40	12.30	12.20	12.10	12.00	11.90
2.80	3.15	3.13	3.48	2.48	3.36	3.73	3.69	4.06	3.90	3.91	3.91	3.89	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88
1.51	1.60	1.68	1.66	1.58	1.35	1.66	1.64	1.92	1.89	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98
1.08	1.17	1.23	1.31	1.37	1.43	1.46	1.50	1.54	1.59	1.62	1.64	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
1.27	1.53	1.77	1.50	1.98	2.09	2.09	2.02	2.20	1.88	2.05	1.97	2.97	3.67	4.36	4.91	2.48	2.58	2.58	2.58	2.58	2.58
14.22	13.10	13.50	13.75	13.90	13.79	13.99	14.13	14.50	14.71	14.19	14.41	13.97	14.88	12.59	13.58	14.28	14.70	14.70	14.70	14.70	14.70
61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91	61.91
9.1	9.6	9.7	9.7	12.5	16.5	14.5	13.2	12.2	15.9	17.0	15.7	20.0	12.4	15.9	11.1	11.1	11.1	11.1	11.1	11.1	11.1
61	70	78	72	80	100	88	87	82	100	98	82	114	81	81	80	80	80	80	80	80	80
7.8%	8.1%	7.8%	8.1%	7.0%	6.4%	6.1%	6.9%	6.5%	5.9%	5.6%	5.6%	6.6%	6.5%	6.6%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%

**CAPITAL STRUCTURE as of 3/31/03**  
 Total Debt \$1385.4 mil. Due in 5 Yrs \$805.1 mil.  
 LT Debt \$1124.7 mil. LT Interest \$65.3 mil.  
 Incl. \$150 mil. 8.3% mand. redeem. pfd. securities.  
 Excl. \$79.9 mil. accounts receivable sale.  
 (LT interest earned 3.7%)  
 Leases, Uncapitalized Annual rentals \$30.4 mil.  
 Pension Assets 12/02 \$324.2 mil. Oblig. \$450.8 mil.  
 Pfd Stock \$39.0 mil. Pfd Div'd \$1.6 mil.  
 390,000 shs. 3.80% to 4.50% (all \$100 par & cum.), callable from \$101 to \$103.70 per sh.  
 Common Stock 69,196,320 shs.  
 MARKET CAP: \$2.0 billion (Mid Cap)

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
857.5	868.3	885.0	903.9	895.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9	885.9
106.8	104.8	122.6	108.2	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4
39.1%	38.8%	35.3%	22.7%	19.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%
5.1%	3.8%	3.5%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
43.4%	45.3%	45.8%	48.0%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%	45.5%
51.2%	49.6%	49.2%	46.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%
1690.6	1763.8	1824.1	1943.8	2051.5	1980.1	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8	1798.8
2318.3	2336.1	2369.5	2343.5	2323.8	2316.4	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9	2298.9
7.7%	7.2%	8.2%	7.0%	7.2%	7.0%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%
11.1%	10.9%	12.4%	10.8%	10.5%	11.8%	9.0%	13.4%	12.2%	13.2%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
11.8%	11.6%	13.2%	11.5%	11.9%	13.1%	9.0%	13.5%	12.6%	13.6%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%	14.5%
1.4%	1.0%	2.6%	.7%	.5%	1.7%	NMF	2.6%	NMF	2.3%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
88%	92%	81%	94%	96%	89%	NMF	81%	104%	83%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%

**ELECTRIC OPERATING STATISTICS**  
 2000 2001 2002  
 % Change Retail Sales (KWh) 46.4 3.3 1.5  
 Avg. Indust. Use (MWh) 1146 918 826  
 Avg. Indust. Sales per MWh (¢) 4.70 4.88 5.12  
 Capacity at Peak (MW) 3470 3904 3909  
 Peak Load, Summer (MW) 8074 8352 8336  
 Annual Load Factor (%) 51.4 55.8 51.2  
 % Change Customers (avg) 1.7 2.0 2.4

**BUSINESS:** Great Plains Energy Incorporated is a holding company for Kansas City Power & Light (KCPL), which supplies electricity to 485,000 customers in western Missouri (57% of revenue) and eastern Kansas (43%). Rev. breakdown: 02 residential, 41% commercial, 40% industrial, 13% other, 1% generating services, 3% gas, 71% nuclear, 22% oil & gas, 2% purchased power. Kansas City, MO 64108-2124. Tel. 816-256-2000. Internet: www.greatplainsenergy.com

**Fixed Charge Cov. (%)** 32.1 32.1 32.1  
**ANNUAL RATES** 2000 2001 2002  
 of change per sh. 11.38 11.90 11.82  
 Cash flow 280.2 348.3 408.3  
 Earnings 280.2 348.3 408.3  
 Dividends 11.38 11.90 11.82  
 Book Value 11.38 11.90 11.82

We have a long-term growth strategy. Our goal is to increase our earnings per share by 10% to 15% annually. We expect a respectable earnings increase in 2004. That's based on a combination of growth at the utility and Great Plains Energy services subsidiary. Strategic Energy's top line is rising rapidly as it gains market share. As prospective customers increasingly seek to avoid volatility in the power markets, we figure this will outweigh the margin pressures when older contracts are renewed. Great Plains has not stated an earnings

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	199.3	200.3	200.3	200.3	199.3
2001	280.2	348.3	408.3	408.3	1461.9
2002	358.8	463.4	588.0	452.7	1861.9
2003	476.3	533.3	670	530	2209
2004	475	600	750	575	2400

forecast, is at the upper end of management's goal of \$1.90-\$2.00 a share. We expect a respectable earnings increase in 2004. That's based on a combination of growth at the utility and Great Plains Energy services subsidiary. Strategic Energy's top line is rising rapidly as it gains market share. As prospective customers increasingly seek to avoid volatility in the power markets, we figure this will outweigh the margin pressures when older contracts are renewed. Great Plains has not stated an earnings

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000		43	1.31	31	2.05
2001	0.06	58	1.89	18	1.59
2002	0.05	57	1.11	41	2.04
2003	28	42	1.05	25	2.09
2004	20	56	1.10	25	2.10

forecast, is at the upper end of management's goal of \$1.90-\$2.00 a share. We expect a respectable earnings increase in 2004. That's based on a combination of growth at the utility and Great Plains Energy services subsidiary. Strategic Energy's top line is rising rapidly as it gains market share. As prospective customers increasingly seek to avoid volatility in the power markets, we figure this will outweigh the margin pressures when older contracts are renewed. Great Plains has not stated an earnings

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
1999	415	415	415	415	1.66
2000	415	415	415	415	1.66
2001	415	415	415	415	1.66
2002	415	415	415	415	1.66
2003	415	415	415	415	1.66

forecast, is at the upper end of management's goal of \$1.90-\$2.00 a share. We expect a respectable earnings increase in 2004. That's based on a combination of growth at the utility and Great Plains Energy services subsidiary. Strategic Energy's top line is rising rapidly as it gains market share. As prospective customers increasingly seek to avoid volatility in the power markets, we figure this will outweigh the margin pressures when older contracts are renewed. Great Plains has not stated an earnings

(A) Excl. nonrec. gains (losses): '90, (11¢); '97, (52¢); '00, 49¢; '01, (\$2.01) net; '02, (5¢); '03, (8¢); '04, 37¢. Incl. gains on sale of gas properties: '00, \$1.10; '01, 19¢. Net earnings report due late July. (B) Dividends historically paid in mid-Mar., June, Sept., and Dec. = Div'd reinvestment plan available. (C) Incl. intangibles. In '02: \$4.34/sh. (D) In mil., adj. for stock. (E) Rate base: Fair value. Rate allowed, or earn. eq. in '95: 15.0% (MO); in '97: 12.0% (KS); earned on avg. com. eq., '02: 14.4%. Regulatory Climate: Average. Company's Financial Strength B++ Stock's Price Stability 95 Price Growth Persistence 15 Earnings Predictability 60

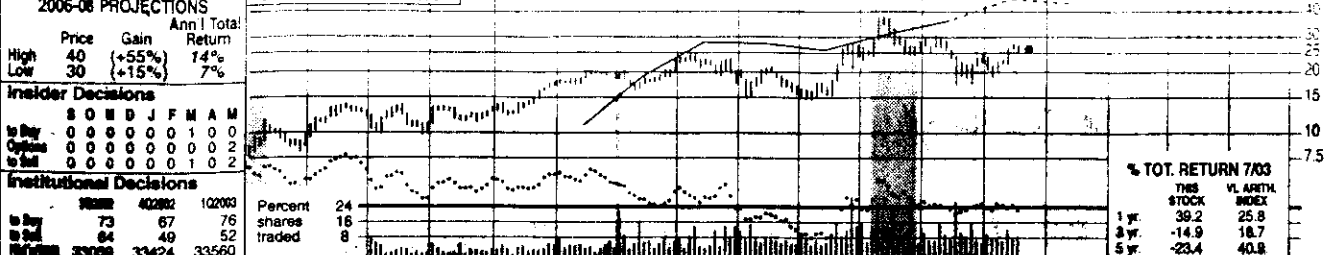
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<b>TIMEINESS</b> 4 Rased 10/4/02	High 14.1 13.9 13.6 18.3 20.5 23.7 24.8 21.5 28.3 37.8 30.8 27.8	Target Price Range 2006 2007 2008
<b>SAFETY</b> 2 Rased 9/16/02	Low 9.4 9.8 11.0 12.1 17.2 15.8 17.4 14.8 14.6 22.9 17.3 19.0	
<b>TECHNICAL</b> 3 Rased 7/18/03	<b>LEGENDS</b> 34 Dividends 3 sh. Divided by Interest Rate Relative Price Strength Options Yes Shaded areas indicate recession	
<b>BETA</b> 70 (30 = Market)		



1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	VALUE LINE PUB. INC.	06-08
20.15	21.91	20.47	20.52	20.40	20.92	21.66	19.35	21.15	27.18	26.15	28.44	41.19	80.13	29.06	30.30	30.30	30.30	Revenue per sh	38.80
4.15	3.85	2.46	2.85	3.14	3.51	3.83	3.57	3.91	3.86	4.57	4.22	4.73	6.46	4.28	4.58	4.75	4.75	"Cash Flow" per sh	5.20
1.97	1.73	.32	.32	.75	1.21	1.66	1.37	1.72	1.88	2.25	1.93	2.32	3.92	1.61	1.70	2.09	2.09	Earnings per sh	2.15
4.57	.38							.36	.63	.77	.80	.80	.80	.86	.91	.95	.95	Div'd Decl'd per sh	1.07
2.67	1.77	1.95	1.91	2.27	2.41	2.86	2.55	2.13	3.07	3.08	2.34	3.75	6.14	3.90	3.90	3.90	3.90	Cap'l Spending per sh	3.58
18.03	18.02	17.36	17.69	15.00	13.29	15.11	16.83	18.08	19.26	20.83	22.11	23.64	25.87	24.90	23.80	23.80	23.80	Book Value per sh	30.20
41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	40.70	38.12	38.12	38.12	38.12	38.12	Common Size Outgr	48.80
7.9	7.8	34.7	29.1	18.5	9.5	7.5	10.6	11.0	10.0	9.8	9.5	8.5	7.3	15.1	15.1	15.1	15.1	Avg Ann'l P/E Ratio	16.5
8.0	8.0	59	25.8	1.86	1.00	.56	.49	.71	.58	.51	.54	.55	.37	.82	.82	.82	.82	Relative P/E Ratio	1.10
12.0%	2.8%							1.9%	3.3%	3.5%	4.4%	4.1%	2.6%	3.5%	3.5%	3.5%	3.5%	Avg Ann'l Div'd Yield	3.1%

<b>CAPITAL STRUCTURE</b> as of 3/31/03		873.9	904.7	808.5	883.4	1135.3	1082.4	1157.5	1611.3	2352.1	3189.0	1480	1480	1600	1600	Revenue (\$mill)	1600
Total Debt \$1150.1 mill. Due in 5 Yrs \$448.0 mill.		57.6	75.7	60.9	72.6	79.3	105.2	79.9	92.7	156.3	84.3	75.0	80.8	85.0	85.0	Net Profit (\$mill)	85.0
LT Debt \$980.1 mill. LT Interest \$58.4 mill.		30.9%	36.9%	45.5%	35.2%	37.1%	34.9%	34.8%	44.5%	34.2%	24.5%	25.0%	25.0%	25.0%	25.0%	Income Tax Rate	25.0%
Avg. interest earned: 2.3%		7%	4%													AFUDC % to Net Profit	
<b>Balance Assets</b> 12/02 \$319.1 mill. Obltg. \$426.9		80.0%	51.5%	50.5%	48.2%	46.6%	53.2%	52.0%	50.4%	48.2%	49.8%	48.0%	47.0%	47.0%	47.0%	Long-Term Debt Ratio	44.5%
Total Book \$12.8 mill. Pfd Div'd \$6 mill.		34.8%	43.2%	48.7%	50.9%	52.5%	45.4%	47.3%	48.9%	51.1%	49.5%	51.0%	52.0%	52.0%	52.0%	Common Equity Ratio	55.0%
1000 shs. 4.58%, \$100 par w/o mandatory		1596.4	1460.5	1444.5	1481.0	1531.2	1896.4	1901.2	1891.3	1978.7	1986.9	2006	2000	2000	2000	Total Capital (\$mill)	2205
redemption.		1703.9	1696.7	1574.4	1552.7	1573.2	1593.8	1582.4	1617.3	1781.0	1867.3	1915	1945	1945	1945	Net Plant (\$mill)	2015
Sinking fund began 2/1/84.		5.9%	7.4%	6.2%	6.6%	6.7%	6.9%	5.9%	6.6%	9.5%	4.7%	5.0%	5.5%	5.5%	5.5%	Return on Total Cap'l	5.0%
<b>Common Stock</b> 39,117,799 shs. as of 5/1/03		9.0%	10.7%	8.5%	9.5%	9.7%	11.8%	8.8%	9.9%	15.3%	6.5%	7.0%	7.0%	7.0%	7.0%	Return on Shr. Equity	7.0%
<b>MARKET CAP:</b> \$1.0 billion (Mid Cap)		9.2%	11.0%	7.9%	9.5%	9.8%	12.1%	8.8%	10.0%	15.4%	6.5%	7.0%	7.5%	7.5%	7.5%	Return on Com Equity	7.0%
		11%	8%	8%	21%	34%	31%	42%	35%	20%	53%	48%	48%	48%	48%	Retained to Com Eq	3.5%
																All Div'ds to Net Prof	50%

**BUSINESS:** PNM Resources, parent of Public Service Company of New Mexico, sells electricity (77% of revenues), gas (23%), other less than 1% in north-central New Mexico (population: 1,300,000). Largest customer: City of Albuquerque. Electric revenue breakdown: residential, 35%; commercial, 43%; industrial, 14%; other, 8%. Area's military establishments are major customers. Fuel: coal, 68%; nuclear, 31%; gas/oil, 1%. Fuel costs: 47% of revs.; labor costs: 16%; depreciation rate: 3.4%. Est'd plant age: 13 years. Has 2,656 employees, 15,046 stockholders. Chairman, Chief Executive Officer & President: Jerry E. Stomba. Incorp.: New Mexico. Address: 4100 Silver Avenue, South West, Albuquerque, New Mexico 87106. Telephone: 505-241-8477. Internet: www.pnm.com

**PNM Resources has an Agreement** with a total capability of 215 mw and will add more units when market conditions are favorable. The settlement provides for a \$20 million increase in base rates and a \$2 million increase in the rate of return on common equity. The agreement also allows PNM to recover \$4.4 million in costs previously approved by the commission but not yet collected. These costs will be recovered over three years. If the regulators approve the arrangement, which we consider likely, the order will take effect in November. The wholesale power marketing business is performing well. Last year, PNM completed two merchant plants with a combined capacity of 215 megawatts (mw) in southern New Mexico. These units have good prospects because transmission restraints make importing power into the area difficult. Too, the company recently began operating three combustion turbines

Quarter	2000	2001	2002	Full Year
Jan-Mar	321.3	329.0	499.5	461.5
Apr-Jun	738.5	668.1	621.9	327.6
Jul-Sep	514.0	264.6	289.4	301.0
Oct-Dec	387.7	340.2	360	372.1
Full Year	369	350	390	1480

Quarter	2000	2001	2002	Full Year
Mar 31	.55	.45	.97	.35
Jun 30	1.60	1.24	.88	.20
Sep 30	.63	.28	.45	.25
Dec 31	.53	.44	.60	.33
Full Year	.55	.45	.65	.35

Quarter	2000	2001	2002	Full Year
Mar 31	.20	.20	.20	.20
Jun 30	.20	.20	.20	.20
Sep 30	.20	.20	.20	.20
Dec 31	.20	.20	.20	.20
Full Year	.20	.20	.20	.20

A) EPS diluted. Next eps rept due late Oct. Incl. nonrecr. gains (losses): '88, (\$4.81); '90, (\$5.4); '92, (\$3.42); '93, (\$2.85); '94, 11c; '95, net: 35c; '97, 4c; '98, net (24c); '99, 8c; '00, 21c; '01, (15c); '03, 69c. (B) Div'ds historically paid in mid-Feb., mid-May, mid-Aug., and mid-Nov. (C) Div'd reinvest. plan avail. (D) Incl. intang. in '02: \$9.34/sh. (E) Rate base: net orig. cost. Elect. ROE allow in '02: 12.52%; earned on avg. com. eq. '02: 6.6%. Regul. Clim.: Avg.

Company's Financial Strength B++  
Stock's Price Stability 90  
Price Growth Persistence 70  
Earnings Predictability 50

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**To subscribe call 1-800-833-0046.**

*Item 3, page 16*

**This stock's yield is about average for a utility, but 3- to 5-year total-return potential is well above average for the industry.** The low payout ratio and improving cash flow suggest healthy annual dividend increases through 2006-2008.

**To subscribe call 1-800-833-0046.**

[illegible][illegible][illegible]

2006-08 PROJECTIONS

Price	Gain	Asset Total Returns
0.00	0.00	0.00
0.01	0.01	0.01
0.02	0.02	0.02
0.03	0.03	0.03
0.04	0.04	0.04
0.05	0.05	0.05
0.06	0.06	0.06
0.07	0.07	0.07
0.08	0.08	0.08
0.09	0.09	0.09
0.10	0.10	0.10
0.11	0.11	0.11
0.12	0.12	0.12
0.13	0.13	0.13
0.14	0.14	0.14
0.15	0.15	0.15
0.16	0.16	0.16
0.17	0.17	0.17
0.18	0.18	0.18
0.19	0.19	0.19
0.20	0.20	0.20
0.21	0.21	0.21
0.22	0.22	0.22
0.23	0.23	0.23
0.24	0.24	0.24
0.25	0.25	0.25
0.26	0.26	0.26
0.27	0.27	0.27
0.28	0.28	0.28
0.29	0.29	0.29
0.30	0.30	0.30
0.31	0.31	0.31
0.32	0.32	0.32
0.33	0.33	0.33
0.34	0.34	0.34
0.35	0.35	0.35
0.36	0.36	0.36
0.37	0.37	0.37
0.38	0.38	0.38
0.39	0.39	0.39
0.40	0.40	0.40
0.41	0.41	0.41
0.42	0.42	0.42
0.43	0.43	0.43
0.44	0.44	0.44
0.45	0.45	0.45
0.46	0.46	0.46
0.47	0.47	0.47
0.48	0.48	0.48
0.49	0.49	0.49
0.50	0.50	0.50
0.51	0.51	0.51
0.52	0.52	0.52
0.53	0.53	0.53
0.54	0.54	0.54
0.55	0.55	0.55
0.56	0.56	0.56
0.57	0.57	0.57
0.58	0.58	0.58
0.59	0.59	0.59
0.60	0.60	0.60
0.61	0.61	0.61
0.62	0.62	0.62
0.63	0.63	0.63
0.64	0.64	0.64
0.65	0.65	0.65
0.66	0.66	0.66
0.67	0.67	0.67
0.68	0.68	0.68
0.69	0.69	0.69
0.70	0.70	0.70
0.71	0.71	0.71
0.72	0.72	0.72
0.73	0.73	0.73
0.74	0.74	0.74
0.75	0.75	0.75
0.76	0.76	0.76
0.77	0.77	0.77
0.78	0.78	0.78
0.79	0.79	0.79
0.80	0.80	0.80
0.81	0.81	0.81
0.82	0.82	0.82
0.83	0.83	0.83
0.84	0.84	0.84
0.85	0.85	0.85
0.86	0.86	0.86
0.87	0.87	0.87
0.88	0.88	0.88
0.89	0.89	0.89
0.90	0.90	0.90
0.91	0.91	0.91
0.92	0.92	0.92
0.93	0.93	0.93
0.94	0.94	0.94
0.95	0.95	0.95
0.96	0.96	0.96
0.97	0.97	0.97
0.98	0.98	0.98
0.99	0.99	0.99
1.00	1.00	1.00
1.01	1.01	1.01
1.02	1.02	1.02
1.03	1.03	1.03
1.04	1.04	1.04
1.05	1.05	1.05
1.06	1.06	1.06
1.07	1.07	1.07
1.08	1.08	1.08

High	80	(+30%)	15%
Low	45	(+10%)	8%
Insider Decisions			

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...and the ...	1.72	1.74	1.84	1.90	1.98	2.02	2.08	2.14	2.18	2.20	2.22	2.24	2.26	2.28	2.30	2.32	2.34	2.36	2.38	2.40	2.42	2.44	2.46	2.48	2.50	2.52	2.54	2.56	2.58	2.60	2.62	2.64	2.66	2.68	2.70	2.72	2.74	2.76	2.78	2.80	2.82	2.84	2.86	2.88	2.90	2.92	2.94	2.96	2.98	3.00	3.02	3.04	3.06	3.08	3.10	3.12	3.14	3.16	3.18	3.20	3.22	3.24	3.26	3.28	3.30	3.32	3.34	3.36	3.38	3.40	3.42	3.44	3.46	3.48	3.50	3.52	3.54	3.56	3.58	3.60	3.62	3.64	3.66	3.68	3.70	3.72	3.74	3.76	3.78	3.80	3.82	3.84	3.86	3.88	3.90	3.92	3.94	3.96	3.98	4.00	4.02	4.04	4.06	4.08	4.10	4.12	4.14	4.16	4.18	4.20	4.22	4.24	4.26	4.28	4.30	4.32	4.34	4.36	4.38	4.40	4.42	4.44	4.46	4.48	4.50	4.52	4.54	4.56	4.58	4.60	4.62	4.64	4.66	4.68	4.70	4.72	4.74	4.76	4.78	4.80	4.82	4.84	4.86	4.88	4.90	4.92	4.94	4.96	4.98	5.00	5.02	5.04	5.06	5.08	5.10	5.12	5.14	5.16	5.18	5.20	5.22	5.24	5.26	5.28	5.30	5.32	5.34	5.36	5.38	5.40	5.42	5.44	5.46	5.48	5.50	5.52	5.54	5.56	5.58	5.60	5.62	5.64	5.66	5.68	5.70	5.72	5.74	5.76	5.78	5.80	5.82	5.84	5.86	5.88	5.90	5.92	5.94	5.96	5.98	6.00	6.02	6.04	6.06	6.08	6.10	6.12	6.14	6.16	6.18	6.20	6.22	6.24	6.26	6.28	6.30	6.32	6.34	6.36	6.38	6.40	6.42	6.44	6.46	6.48	6.50	6.52	6.54	6.56	6.58	6.60	6.62	6.64	6.66	6.68	6.70	6.72	6.74	6.76	6.78	6.80	6.82	6.84	6.86	6.88	6.90	6.92	6.94	6.96	6.98	7.00	7.02	7.04	7.06	7.08	7.10	7.12	7.14	7.16	7.18	7.20	7.22	7.24	7.26	7.28	7.30	7.32	7.34	7.36	7.38	7.40	7.42	7.44	7.46	7.48	7.50	7.52	7.54	7.56	7.58	7.60	7.62	7.64	7.66	7.68	7.70	7.72	7.74	7.76	7.78	7.80	7.82	7.84	7.86	7.88	7.90	7.92	7.94	7.96	7.98	8.00	8.02	8.04	8.06	8.08	8.10	8.12	8.14	8.16	8.18	8.20	8.22	8.24	8.26	8.28	8.30	8.32	8.34	8.36	8.38	8.40	8.42	8.44	8.46	8.48	8.50	8.52	8.54	8.56	8.58	8.60	8.62	8.64	8.66	8.68	8.70	8.72	8.74	8.76	8.78	8.80	8.82	8.84	8.86	8.88	8.90	8.92	8.94	8.96	8.98	9.00	9.02	9.04	9.06	9.08	9.10	9.12	9.14	9.16	9.18	9.20	9.22	9.24	9.26	9.28	9.30	9.32	9.34	9.36	9.38	9.40	9.42	9.44	9.46	9.48	9.50	9.52	9.54	9.56	9.58	9.60	9.62	9.64	9.66	9.68	9.70	9.72	9.74	9.76	9.78	9.80	9.82	9.84	9.86	9.88	9.90	9.92	9.94	9.96	9.98	10.00	10.02	10.04	10.06	10.08	10.10	10.12	10.14	10.16	10.18	10.20	10.22	10.24	10.26	10.28	10.30	10.32	10.34	10.36	10.38	10.40	10.42	10.44	10.46	10.48	10.50	10.52	10.54	10.56	10.58	10.60	10.62	10.64	10.66	10.68	10.70	10.72	10.74	10.76	10.78	10.80	10.82	10.84	10.86	10.88	10.90	10.92	10.94	10.96
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	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2
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1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385</
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Debt \$9697.9 mil.	LT Interest \$500.1 mil.	48.2%	49.3%	49.6%	49.1%	48.6%	48.5%	48.8%	51.0%	50.0%	58.9%	54.0%	Long-Term Debt Ratio	58.9%
LT Interest earned: 1.5x		48.1%	49.2%	49.3%	50.2%	53.2%	52.4%	52.5%	47.6%	38.5%	40.4%	48.6%	Common Equity Ratio	41.0%

Ed Stock \$92.8 mil.	Pfd Div'd \$4.5 mil.	\$432.2	\$940.5	\$320.5	\$300.9	\$293.5	\$299.5	\$623.1	\$500.8	11407	15580	16517	16800	17300	Total Capital (Small)	16700
\$21,814 shs. \$4.10 to \$5.44 cum. no par. callable		8.8%	7.7%	8.5%	8.9%	9.9%	8.29%	7.76%	10437	10915	10856	10905	11275	Net Plant (Small)	11500	

13.2%	11.5%	13.7%	13.8%	13.5%	13.3%	11.0%	6.7%	11.4%	12.0%	11.5%	Return on Total Cap'l	7.0%
13.0%	11.7%	14.1%	14.2%	13.6%	13.4%	11.1%	6.7%	11.5%	12.1%	12.0%	Return on Shr. Equity	11.0%

NET CAP: \$9.7 billion (Large Cap)	3.8%	1.9%	4.1%	4.5%	3.9%	4.0%	2.5%	NMF	4.3%	5.0%	4.5%	4.5%	Retained to Com Eq	11.0%
ELECTRIC OPERATING STATISTICS	74%	65%	72%	80%	72%	71%	78%	101%	63%	58%	61%	61%	Retained to Com Eq	4.5%
													All Div's to Net Prof	80%

Change Retail Sales (KWH)	2000	2001	2002	BUSINESS: Progress Energy, parent of CP&L Energy and Florida	sources (KWH): gas/oil/coal, 63%; nuclear, 36%; hydro, 1%. Has
Induct. Use (MWH)	NM	-4	2.8	Progress, supplies electricity to portions of North Carolina, South	15,300 employ., 72,380 comm. stockholders. '02 deprec. rate:
Induct. Flow, net (KWH/yr)	1982	2306	2372	Caroline and Florida. Other operations include water and	
		N.A.	5.62		

21623	22589	22589
19839	19186	20395
60.2	57.7	57.3

Change Customers (yr-end)	NMF	+2.5	+2.2
Change Cov. (%)	209	186	191

ANNUAL RATES	Past 10 Yrs.	Past 5 Yrs.	Est'd 10-12 to 15-16
Change (per sh)	6.5%	10.6%	
Dividend	6.5%	10.6%	

ash Flow	0.3%	9.3%	N/A
ash Flow	0.5%	4.0%	N/A
arnings	3.5%	4.5%	N/A
vidends	3.5%	3.0%	N/A

Book Value	6.5%	9.0%	MARK	tax credits, which were designed to reduce	year. Cash proceeds from these sales
			NAIF	U.S. dependence on imported oil by	would be applied to debt reduction.
Quarterly Revenues (\$ mil.)					

Quarter	Mar.31	Jun.30	Sep.30	Dec.31	Year
2000	877.6	892.3	1084	1265	4118.9
1999	808.8	721.5	729.0	1007	3366.3

02	1906	2015	2350	1907	2461.5
02	1787	1959	2277	1922	7945.0
03	2016	2013	2350	2021	8400

	2060	2080	2390	2070	2600
EARNINGS PER SHARE A					
Mar. 31, Jun. 30, Sep. 30, Dec. 31					

Year	Mar. 31	Jun. 30	Sep. 30	Dec. 31	Year
2000	.56	.70	1.15	d.07	2.34
2001	.77	.56	1.77	.33	2.43

92	77	83	1.53	.71	3.84	auditor's findings. The loss of tax credits	retail sales points to an earnings uptick
93	89	64	1.60	.57	3.70	would have a serious adverse impact on	next year. The stock is ranked 4 (below
94	92	37	1.00			PG&E's prospects.	

Mar 21	0.83	1.17	1.60	2.00	2.50
Quarterly dividends paid =B					
Mar 21	Jun 20	Sep 19	Dec 18	Mar 17	Jun 16

	Mar. 31	Jun. 30	Sep. 30	Dec. 31	Year
19	50	50	50	50	200
20	50	50	50	50	200

investors might do well to stay on the sidelines until this matter is clarified.

<p>Interest Rate: 6.25% (fixed) due late Oct. 2002. (A) Div. yield: 1.5% (B) Payout ratio: 32% (C) Div. growth: 10% (D) Div. yield: 1.75%</p>	<p>• Div. reinvestment plan available. (C) Inc. per share in '02: \$23.63/sh. (D) Rate Base '02 in Fla.: rev. sharing incentive plan: earn on 102 avg. com. eq.: 13.2% (E) Div. Yield: 1.75%</p>	<p><b>Company's Financial Strength</b> B++</p>
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<b>Stock Price Stability</b>	90
<b>Price Growth Persistence</b>	NMF
<b>Earnings Predictability</b>	NMF





# SOUTHERN CO. NYSE:SO

RECENT PRICE 28.50

PE RATIO 15.7 (Trading: 14.5 Median: 14.0)

RELATIVE P/E RATIO 0.90

DIVIDEND 4.9%

VALUE LINE 175

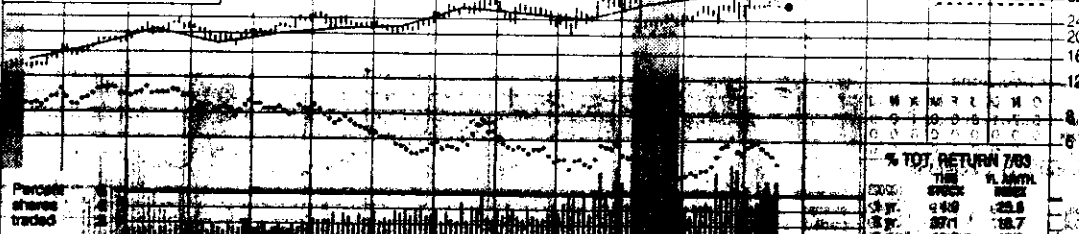
**TIMELESSNESS** 3 New 35.03  
**SAFETY** 2 Lowered 12.00  
**TECHNICAL** 3 Raised 35.03  
 BETA 65 1.00 = Market

**LEGENDS**  
 08 x Dividends 0 sh  
 divided by Interest Rate  
 Relative Price Strength  
 2-for-1 split 3/94  
 Options: Yes  
 Shaded areas indicate recession

**2006-08 PROJECTIONS**  
 Price Gain Return  
 High 40 (+40%) 13%  
 Low 30 (+5%) 6%

**Insider Decisions**  
 O N D J F M A M J  
 Buy 0 0 0 0 1 0 0 1 0  
 Sell 0 0 0 0 1 2 0 0 2  
 Net 0 0 0 0 0 2 0 0 2

**Institutional Decisions**  
 Buy 251 257 254  
 Sell 189 198 201  
 Net 248821 248821 248821



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Market Price	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	28.50	
Dividend	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	
EPS	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	
Book Value	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	15.15	
Capex	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
Common Share Yield	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	
Relative P/E Ratio	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	
Annual Dividend Yield	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	
Revenue (MM)	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	10125	
Net Profit (MM)	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	
Effective Tax Rate	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	32.0%	
APQC % to Net Profit	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	
Long-Term Debt Ratio	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	43.5%	
Common Equity Ratio	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	46.0%	
100% Common Equity	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	
Net Plant (MM)	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175	
Return on Total Capital	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	
Return on Stk. Equity	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	
Return on Debt Capital	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	
Return on Equity	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
Return on Assets	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%

**ELECTRIC OPERATING DIVISION**  
 The Electric Operating Division is the primary source of earnings for Southern Company. It operates a fleet of generating units, including coal, gas, and nuclear, and owns a significant portion of the transmission and distribution infrastructure. The division's performance is closely tied to the overall economic activity and the demand for electricity.

**REGULATORY DIVISION**  
 The Regulatory Division is responsible for managing the company's regulatory affairs, including rate-of-return cases, fuel cost recovery, and environmental compliance. It works closely with state and federal regulatory agencies to ensure the company's interests are protected.

**PLANT CONSTRUCTION DIVISION**  
 The Plant Construction Division is responsible for the design, construction, and commissioning of new power plants and transmission lines. It manages the capital budget and ensures that projects are completed on time and within budget.

**MARKETING DIVISION**  
 The Marketing Division is responsible for selling the company's electricity and gas products to various customers, including utilities, industrial users, and commercial entities. It also manages the company's participation in power pools and other energy markets.

**FINANCIAL DIVISION**  
 The Financial Division is responsible for the company's overall financial management, including capital raising, debt management, and financial reporting. It ensures that the company maintains a strong financial position and complies with all applicable financial regulations.

**GENERAL AND ADMINISTRATIVE DIVISION**  
 The General and Administrative Division provides support services to the other divisions, including human resources, legal, and information technology. It also manages the company's corporate affairs and public relations.

**ELECTRIC OPERATIONS STATISTICS**

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**BUSINESS:** TECO Energy Corp. is a holding company for Tampa Electric, serving nearly half of the customers in central and west Florida. Megawatt-hour sold: residential, 35%; industrial, 14%; commercial, 33%; other, 8%. Over 90% of Tampa Electric's electric generation is from coal-fired plants. TECO also mines coal, develops unregulated power projects, is involved in coalbed methane

**TECO Energy is selling assets and has out its dividend up, up its balance sheet.** The utility recently announced plans to sell its Hattiesburg Power Station for \$115 million and the assumption of all outstanding project-related debt. The transaction is expected to close by the end of the third quarter and will likely record a pretax gain of around \$60 million (not included in our earnings presentation) on the sale. The utility also reduced its annual dividend rate from \$1.42 to \$0.78 a share, effective May 1st. TECO is in a frantic race to raise cash to fund construction projects at Tampa Electric and its non-regulated power services subsidiary. The company completed the sale of its coalbed methane properties for \$140 million earlier this year. In late April, Moody's Investor Service downgraded TECO's debt rating to junk status, which activated debt obligations on the construction of the nearly completed Gila River and Union power stations. The utility raised \$550 million from two stock offerings over the past year, increasing its current shares outstanding to roughly 177 million.

charges; the company's share net will likely fall by a hefty 35%-40% this year. TECO took \$155.9 million, or \$0.89 a share, in nonrecurring charges in the second quarter alone. Most of these charges stemmed from writeoffs of its turbine purchase cancellations and nonregulated power projects. The utility had aggressively built up its nonregulated power assets, but overcapacity in the power markets has limited its options to sell electricity from two power plants scheduled to go online in 2003. Although the company continues to sign new contracts, it will likely not be able to sell the total capacity of its 2,145-megawatt Gila River Power Station plant in Arizona and its 2,200-megawatt Union Power Station facility in Arkansas. On the bright side, TECO recently completed construction of the final two units at Gila.

**Conservative investors should sit on the sidelines for now.** The utility remains in a very dicey financial position. Furthermore, the high dividend yield is an indication of the uncertainties that still remain here.

ed earnings. Excl. nonrecurring gains (losses): '88, (6c); '93, 10c; '97, (6c); '99, 10c; '03, (\$1.12). Next earnings report due late Oct. (B) Dividends historically paid in mid-

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February, mid-May, mid-August, and mid-November. Divid reinvestment plan avail. (C) Incl. deferred charges in '02 \$817.9 mill., \$4.00/sh. (D) In mill., adjusted for split. (E)

Rate base: net original cost. Allowed return on common equity in '95 12.75%. Earned on '02 avg. common equity 12.71%. Regulatory Climate: Above Average.

Company's Financial Strength	B
Stock's Price Stability	75
Price Growth Persistence	20
Earnings Predictability	80

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**VALUE** **719**  
**LINE**

Target Price Range		
2006	2007	2008

Percent  
shares  
traded

1991	1992	1993
15.23	15.05	15.61
3.33	3.22	3.84

1.87	1.87	1.87
1.23	1.29	1.34
2.40	3.11	3.43
14.35	14.97	15.67

101.04	103.09	105.32
12.1	15.6	15.2
.77	.95	.90

5.4%	5.0%	4.9%
33	1643.7	
\$1758.0 mill.	192.9	
\$219.9 mill.	33.5%	

Securities	7.6%
	43.3%
ds \$33.6 mill.	55.5%
Profit \$1.08	23.2%

2972.8	
2809.1	
8.2%	
11.4%	

p)		11.4%	
		3.0%	
\$		75%	
2001	2002		BUSINE

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5743	15598	company
4.29	4.34	service
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232	260	Wiscon struc
May 10 '12		

5% 10-11	20%
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80%	20%
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ms	Mar	June Sep

net '01, due in early  
plan available. (E) Rate base: \$12.79/sh.

Wisconsin Energy has begun construction of the first plant of its new "Future" plan. The Wisconsin commission approved a \$450-million, 10-year contract which is scheduled to go into service in 2008. They will be leased to the utility an agreement that gives Wisconsin an opportunity (but not a guarantee) to earn a 12.7% return on equity. The plants are part of the \$3.4 billion company intends to spend on new generation over a 10-year period. Over that time it also expects to spend \$1.3 billion on upgrading existing facilities, and \$2.7 billion on transmission and distribution. The "Future" also proposes the construction of three coal-fired units. The Wisconsin commission will hold hearings on the plan this year, with a decision due by next year. Some intervenors have expressed opposition to this phase of the plan due to environmental and cost concerns, but Wisconsin Energy believes that fuel diversity is desirable. Indeed, recent high natural gas prices support its argument, even though coal-fired plants are more costly to build than gas-fired facilities. The company

ny is seeking a 12.9% ROIC on its coal-fired investment. We have raised our earnings estimates. When coal prices are low, by a dollar a barrel, we have a more favorable weather conditions than what is estimated 10/14-24/03 in this quarter results. We have also fine-tuned our 2004 estimate upward, as Wisconsin Energy continues to benefit from lower interest rates on its investments. These shares are ranked 8 (Average) for Timeliness. Wisconsin Energy stock has one of the lowest yields of any dividend-paying electric-utility equity. The board of directors hasn't raised the disbursement since it was slashed nearly 50% in 2000. Instead, the company has been repurchasing stock (though some of the effects of the buyback have been offset by issuances of stock through the dividend reinvestment program, and issuances actually exceeded repurchases in the first quarter of 2003). Since we project some dividend growth by 2006-2008, total-return potential over that time is comparable to that of the average electric-utility issue.

Paul E. Debbas, CFA July 4, 2003

Paul E. Debbas, CFA July 4, 2003

Mar., June, Sept., Dec. = Div'd reinvestment plan available. (C) Incl. intangibles. In '02: \$1.5 bill., \$12.79/sh. (D) In millions, adj. for split. (E) Rate base: Net original cost. Rate allowed

Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	10
Earnings Predictability	45

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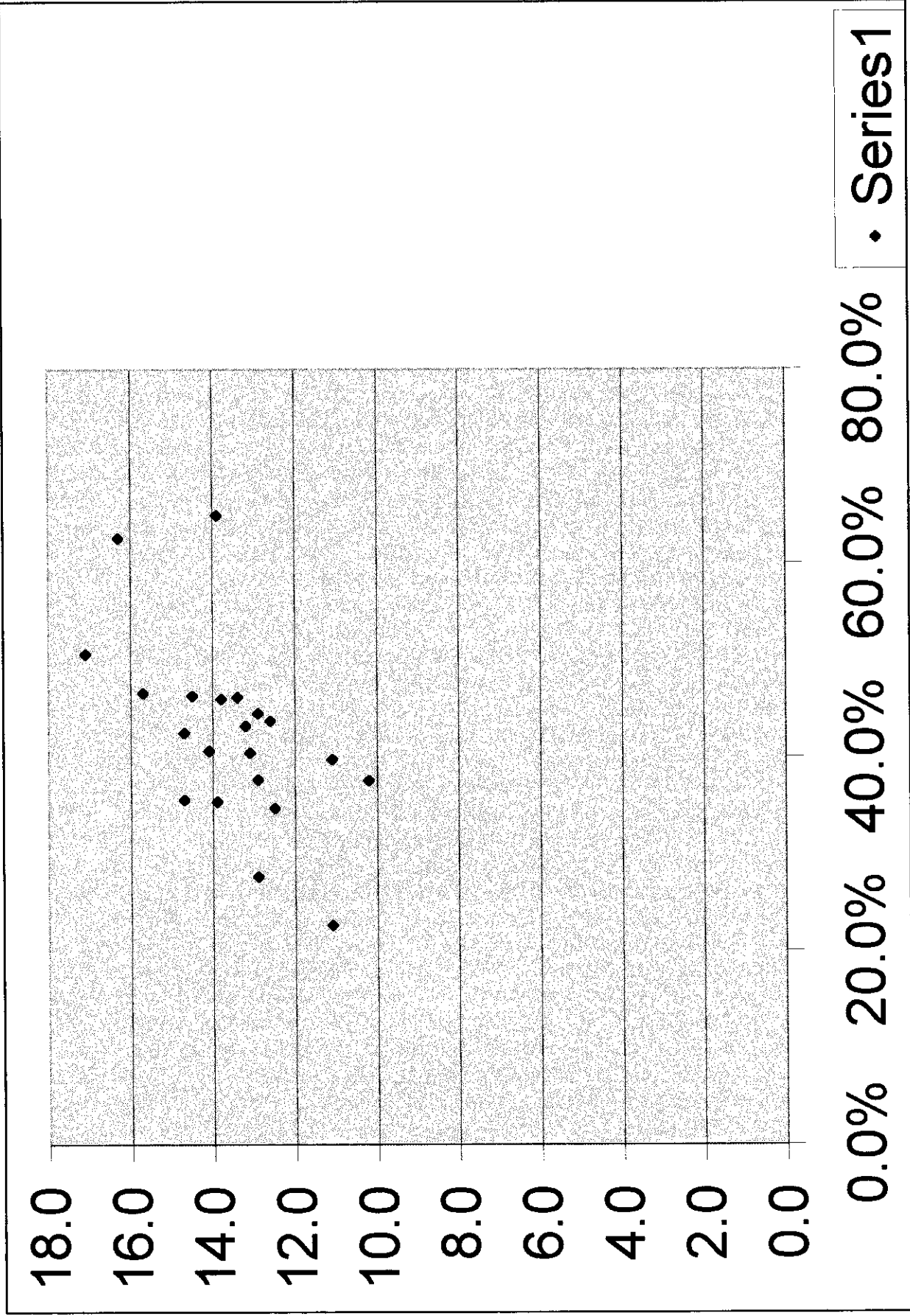
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Item 3, page 21



Price Stability	10
Depth Persistence	2
Predictability	8

subscribe call 1-800-833-00





Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

4. In reference to Dr. Weaver's discussion of a 50 percent target equity ratio and a 52.5 percent cap on page 8 of his testimony:
- a. Does Dr. Weaver also recommend that if the equity ratio drops below 47.5 percent, it should be reset at 50.0 percent?
  - b. If the answer to (a) is negative, provide an explanation of why Dr. Weaver would not make such a recommendation.
  - c. If the answer to (a) is negative, wouldn't asymmetry in his proposal increase the Companies' risk? If not, why not.

Answer:

- a. No. The control of the capital structure at or below the 50% equity level should be a management prerogative.
- b. See response to a.
- c. Financial risk would increase as the proportion of equity is lower. The company's management should be aware of this fact. However, they may possess information about the cost and benefit phenomenon that is not known by the Commission and would cause them to prudently choose an equity ratio below 47.5%. An example of such an opportunity would be access to debt that has a cost rate that is a bargain.





Responses of the Attorney General's Witness  
 Carl G. K. Weaver to  
 Commonwealth of Kentucky PSC Case No. 2003-00334  
 And Case No. 2003-00335  
 Louisville Gas and Electric Company's and Kentucky Utilities Company's  
 Initial Requests for Information

5. In reference to the "Percent Electric Revenues" shown on Schedule 12:
- Specify what year these data reflect.
  - Specify what financial data are reflected in the denominator of this ratio.
  - Provide, for each company in the two comparison groups the electric revenues and the data that make up the denominator in this ratio.
  - Provide, for KU and LG&E, the electric revenues and the data that make up the denominator in this ratio.

Answer:

- Refer to the next to the last column in Schedule 12. "CD" indicates that the data source was Compact Disclosure. The CD, as indicated in the footnote to Schedule 12, was from the August 2003 disc. Constellation was incorrectly labeled. Its source was VL. It reflects 2001 data. Progress was also labeled incorrectly. Its source was CD. As indicated in the footnote to Schedule 12, the LG&E and KU data were from the FERC Form 1 and reflect 2002 data.
- The VL data was compiled by Value Line analysts and is assumed to be accurate. The CD data was compiled from the company's description or the segment data obtained from each company's 10-K report to the SEC.
- Attached are printouts of the CD data from which show the electric revenues and the denominator revenues used for the calculation. They are:

	<u>Numerator</u>	<u>Denominator</u>	<u>Percent</u>
Constellation	From Value Line		
Progress	6,600,689	8,063,505	82
Empire	In summary description		
PNM Resources	From Value Line		
DTE	12,934,000	15,955,000	81
MGE	224,987	351,626	64
Cinergy	From Value Line		
Southern	In business summary description		
FPL Group	7,378,000	8,311,000	89

- |        |                                     |
|--------|-------------------------------------|
| KU –   | 888,219,072 / 888,219,072 = 100%    |
| LG&E - | 758,490,551 / 1,026,183,706 = 73.9% |

Item 5, page 2

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## PROGRESS ENERGY INC

DESCRIPTION OF BUSINESS: THE GROUP'S PRINCIPAL ACTIVITIES ARE THE GENERATION, TRANSMISSION, DISTRIBUTION AND SALE OF ELECTRICITY AND NATURAL GAS IN PORTIONS OF NORTH AND SOUTH CAROLINA AND FLORIDA. THE GROUP IS ALSO INTO THE BUSINESS OF TELECOMMUNICATION SERVICES, COAL AND SYNTHETIC FUEL OPERATIONS, ENERGY MANAGEMENT AND MERCHANT ENERGY GENERATION. THE GROUP'S BUSINESS SEGMENTS ARE ELECTRIC UTILITIES, PROGRESS VENTURES AND RAIL SERVICES. THE ELECTRIC UTILITY ENCOMPASSES ALL REGULATED UTILITY OPERATIONS. PROGRESS VENTURES INCLUDE FUEL EXTRACTION, MANUFACTURING AND DELIVERY, SYNTHETIC FUELS PRODUCTION, MERCHANT GENERATION AND ENERGY MARKETING. RAIL SERVICES INCLUDE RAILCAR REPAIR, RAIL PARTS RECONDITIONING AND SALES AND OTHER RAIL RELATED SERVICES. IN 2002, THE GROUP ACQUIRED WALTON COUNTY POWER, LLC, WASHINGTON COUNTY POWER, LLC AND WESTCHESTER GAS COMPANY. ELECTRIC OPERATIONS ACCOUNTED FOR 82% OF 2002 REVENUES; RAIL SERVICES, 9% AND PROGRESS VENTURES, 9%.

SEGMENT DATA (SOURCE: 10-K 12/31/2002)	SALES (000S)	OP INCOME
CP&L ELECTRIC	3,538,957	453,115
FLORIDA POWER ELECTRIC	3,061,732	309,594
PROGRESS VENDURES	748,317	271,088
RAIL SERVICES	714,499	-41,733

8,063,505 81.8

## FIVE YEAR SUMMARY

DATE	SALES (000\$)	NET INCOME	EPS
2002	7,945,120	528,386	2.43
2001	8,085,380	541,610	2.65
2000	3,768,922	478,361	3.04
1999	3,264,957	379,288	2.56
1998	3,211,552	396,271	2.75
GROWTH RATE	25.4	7.4	-3.0

## PRELIMINARY EARNINGS DATA

ITEMS	VALUES	PERIOD	NEWS DATE
Basic EPS	1.54	6M	07/25/2003
Fully Diluted EPS	1.53	6M	07/25/2003
Common Shares Outstanding	239,816,121	1Q	05/15/2003
Net Sales	2,012,684,000	2Q	07/25/2003
Operating Profit	358,940,000	1Q	05/15/2003
Pre-Tax Income	111,136,000	2Q	07/25/2003
Net Income	152,823,000	2Q	07/25/2003
Total Current Assets	2,827,752,000	1Q	05/15/2003
Total Assets	23,172,892,000	1Q	05/15/2003
Total Current Liabilities	3,030,670,000	1Q	05/15/2003
Stockholder's Equity	6,232,890,000	3Q	11/20/2002
Book Value per Common Shr	29.36	2Q	07/25/2003
Pre-Tax Extra Gain(Loss)	-224,800,000	9M	11/20/2002
Gain(Loss) due to Acct Chng	2,513,000	2Q	07/25/2003
WtdAvg ComStock(Basic)	233,438,000	1Q	05/15/2003
WtdAvg ComStock(Fully Diluted)	234,369,000	1Q	05/15/2003

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## EMPIRE DISTRICT ELECTRIC CO

DESCRIPTION OF BUSINESS: THE GROUP'S PRINCIPAL ACTIVITIES ARE TO GENERATE, PURCHASE, TRANSMIT, DISTRIBUTE AND SELL ELECTRICITY IN PARTS OF MISSOURI, KANSAS, OKLAHOMA AND ARKANSAS. THE GROUP ALSO PROVIDES WATER SERVICE TO THREE TOWNS IN MISSOURI. THE GROUP PROVIDES ELECTRIC SERVICE AT RETAIL TO 119 INCORPORATED COMMUNITIES AND TO VARIOUS UNINCORPORATED AREAS AND AT WHOLESALE TO FOUR MUNICIPALLY-OWNED DISTRIBUTION SYSTEMS AND TWO RURAL ELECTRIC COOPERATIVES. THE GROUP OPERATES UNDER FRANCHISES HAVING ORIGINAL TERMS OF TWENTY YEARS OR LONGER IN VIRTUALLY ALL OF THE INCORPORATED COMMUNITIES. THE GROUP ALSO OFFERS ELECTRONIC MONITORED SECURITY SERVICES, GENERATORS, SURGE SUPPRESSORS, DECORATIVE LIGHTING AND OTHER ENERGY SERVICES. ON 01-FEB-2003, THE GROUP ACQUIRED JOPLIN.COM HOLDINGS, INC. ELECTRICITY SALES ACCOUNTED FOR 96% OF 2002 REVENUES; NON-REGULATED INCOME, 3% AND WATER SUPPLY, 1%.

## FIVE YEAR SUMMARY

DATE	SALES (000\$)	NET INCOME	EPS
2002	305,903	25,524	1.19
2001	265,821	10,403	0.59
2000	261,691	23,617	1.35
1999	243,243	22,170	1.13
1998	239,858	28,323	1.53
GROWTH RATE	6.2	-2.5	-6.0

## PRELIMINARY EARNINGS DATA

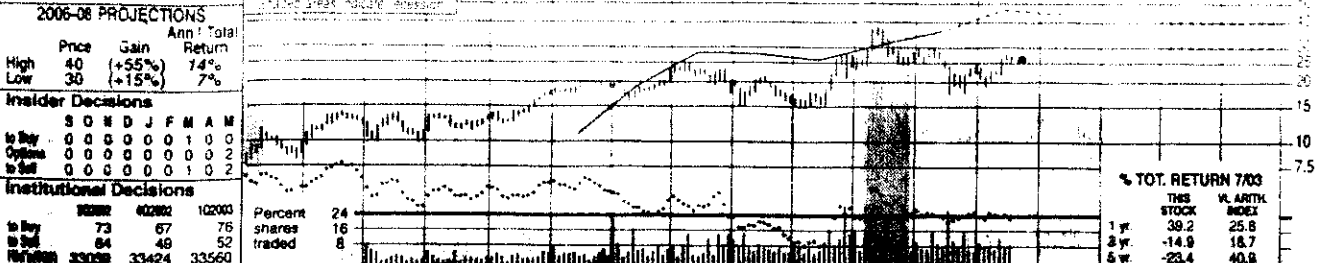
ITEMS	VALUES	PERIOD	NEWS DATE
Basic EPS	0.27	1Q	04/30/2003
Primary EPS	0.28	4Q	01/22/1998
Primary EPS	1.29	12M	01/22/1998
Fully Diluted EPS	0.27	1Q	04/30/2003
Common Shares Outstanding	22,684,051	1Q	05/27/2003
Net Sales	76,906,000	1Q	04/30/2003
Operating Profit	14,185,000	1Q	05/27/2003
Pre-Tax Income	9,403,000	1Q	05/27/2003
Net Income	12,786,000	9M	05/26/2003
Total Current Assets	75,758,365	1Q	05/27/2003
Total Assets	982,021,501	1Q	05/27/2003
Total Current Liabilities	85,156,244	1Q	05/27/2003
Stockholder's Equity	331,686,614	1Q	05/27/2003
WtdAvg ComStock(Basic)	22,607,643	1Q	05/27/2003
WtdAvg ComStock(Primary)	16,729,279	4Q	01/22/1998
WtdAvg ComStock(Primary)	16,599,269	12M	01/22/1998
WtdAvg ComStock(Fully Diluted)	22,607,643	1Q	05/27/2003

# PNM RESOURCES NYSE:PNM

RECENT PRICE 26.20 P/E RATIO 13.8 (Trailing: 15.7 Median: 9.5) RELATIVE P/E RATIO 0.81 DIV'D YLD 3.6% VALUE LINE 1785

TIMELINESS 4 Rased 10/4/02 SAFETY 2 Rased 5/16/02 TECHNICAL 3 Rased 7/18/02 BETA 70 (JC + Market)

2006-08 PROJECTIONS Price 40 Gain (+55%) Ann'l Total Return 74% High 30 Low 30 (+15%) 7%



1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	VALUELINE P/B, INC.	06-08
20.15	21.91	20.47	20.52	20.40	20.92	21.66	19.35	21.15	27.18	26.15	28.44	41.19	60.13	29.86	29.86	30.00	30.00	Revenue per sh	30.00
4.18	3.85	2.46	2.65	3.14	3.51	3.83	3.57	3.91	3.86	4.57	4.22	4.73	6.46	4.25	4.25	4.75	4.75	Cash Flow per sh	5.20
1.87	1.73	.32	.32	.75	1.21	1.66	1.37	1.72	1.86	2.25	1.93	2.32	3.92	1.81	1.81	2.00	2.00	Earnings per sh A	2.15
1.87	1.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38	Div'd Dec'd per sh	1.07
2.24	2.87	1.77	1.95	1.91	2.27	2.41	2.86	2.56	2.13	3.07	3.08	2.34	3.75	6.77	6.14	3.80	3.80	Cap'l Spending per sh	2.50
18.00	18.02	17.36	17.69	15.00	13.29	15.11	16.83	18.06	19.26	20.63	22.11	23.64	25.87	24.90	25.00	27.00	27.00	Book Value per sh	30.20
41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	41.77	40.70	38.12	38.12	38.12	40.30	40.30	Common Sh Outg'd	40.30
7.8	7.8	34.7	29.1	16.5	9.5	7.5	10.8	11.0	10.0	9.8	9.5	8.5	7.3	15.1	15.1	15.1	15.1	Avg Ann'l P/E Ratio	18.5
1.02	.86	.59	2.58	1.86	1.00	.56	.49	.71	.68	.58	.51	.54	.55	.37	.37	.37	.37	Relative P/E Ratio	1.10
1.02	1.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	Avg Ann'l Div'd Yield	3.1%

CAPITAL STRUCTURE as of 3/31/03 Total Debt \$1150.1 mill. Due in 5 Yrs \$448.0 mill. LT Debt \$800.1 mill. LT Interest \$56.4 mill. (Interest earned: 2.3x)

Assets: 1262 \$319.1 mill. Oblig. \$426.9 mill. Stock \$12.8 mill. Pfd Div'd \$6 mill. 1000 shs. 4.58%, \$100 par w/o mandatory redemption. Offering fund began 2/1/84.

Common Stock 39,117,799 shs. as of 5/1/03 MARKET CAP: \$1.0 billion (Mid Cap)

2000	2001	2002
4163	4252	5186
5.16	5.16	5.16
1521	1521	1742
1368	1397	1456
66.6	69.9	67.5
+2.0	+2.4	+1.5

BUSINESS: PNM Resources, parent of Public Service Company of New Mexico, sells electricity (77% of revenues), gas (23%), other less than 1% in north-central New Mexico (population: 1,300,000). Largest customer: City of Albuquerque. Electric revenue breakdown: residential, 35%; commercial, 43%; industrial, 14%; other, 8%. Area's military establishments are major customers: Fort

2000	2001	2002
321.3	329.0	499.5
736.5	666.1	621.9
314.0	264.6	289.4
387.7	340.2	360
360	350	380

2000	2001	2002
.55	.45	.97
1.60	1.24	.88
.63	.28	.45
.53	.44	.60
.55	.45	.65

2000	2001	2002
20	20	20
20	20	20
20	20	20
20	22	22
22	23	23

Item 5, page 5

## DTE ENERGY CO

SEGMENT DATA (SOURCE: 10-K 12/31/2002)      SALES (000\$)      OP INCOME

ELECTRIC UTILITY	12,934,000	NA
GAS UTILITY	3,021,000	NA
	<u>15,955,000</u>	81%

FIVE YEAR SUMMARY

DATE	SALES (000\$)	NET INCOME	EPS
2002	6,749,000	632,000	NA
2000	5,791,000	332,000	NA
2001	4,638,000	468,000	NA
2000	4,499,000	483,000	NA
1999	4,174,000	443,000	NA
GROWTH RATE	12.7	9.2	NA

BALANCE SHEET

FISCAL YEAR ENDING	ANNUAL ASSETS (000\$)	12/31/2001	12/31/2000
	12/31/2002		
CASH	370,000	425,000	152,000
RECEIVABLES	1,198,000	987,000	562,000
INVENTORIES	576,000	505,000	335,000
OTHER CURRENT ASSETS	620,000	562,000	603,000
TOTAL CURRENT ASSETS	2,764,000	2,479,000	1,652,000
PROP, PLANT & EQUIP	17,862,000	17,073,000	13,162,000
ACCUMULATED DEP	8,049,000	7,524,000	5,775,000
NET PROP & EQUIP	9,813,000	9,549,000	7,387,000
INVEST & ADV TO SUBS	904,000	1,042,000	667,000
DEFERRED CHARGES	2,982,000	3,316,000	2,688,000
INTANGIBLES	2,119,000	2,003,000	24,000
DEPOSITS & OTH ASSET	656,000	492,000	238,000
TOTAL ASSETS	19,238,000	18,881,000	12,656,000

FISCAL YEAR ENDING	ANNUAL LIABILITIES (000\$)	12/31/2001	12/31/2000
	12/31/2002		
NOTES PAYABLE	414,000	681,000	503,000
ACCOUNTS PAYABLE	647,000	581,000	404,000
CUR LONG TERM DEBT	NA	NA	297,000
CUR PORT CAP LEASES	1,018,000	517,000	NA
ACCRUED EXPENSES	164,000	225,000	162,000
INCOME TAXES	NA	NA	116,000
OTHER CURRENT LIAB	970,000	823,000	565,000
TOTAL CURRENT LIAB	3,213,000	2,827,000	2,047,000
MORTGAGES	5,656,000	5,892,000	NA
DEFERRED CHARGES/INC	1,263,000	1,853,000	1,971,000
LONG TERM DEBT	2,047,000	1,947,000	3,894,000
NON-CUR CAP LEASES	82,000	89,000	145,000
OTHER LONG TERM LIAB	2,412,000	1,684,000	590,000
TOTAL LIABILITIES	14,673,000	14,292,000	8,647,000
COMMON STOCK NET	3,052,000	2,811,000	1,912,000
RETAINED EARNINGS	2,132,000	1,846,000	2,097,000
OTHER EQUITIES	-619,000	-68,000	NA
SHAREHOLDER EQUITY	4,565,000	4,589,000	4,009,000
TOT LIAB & NET WORTH	19,238,000	18,881,000	12,656,000

MGE ENERGY INC

SEGMENT DATA (SOURCE: 10-K 12/31/2002)	SALES (000S)	OP INCOME
ELECTRIC OPERATIONS	224,987	31,045
GAS OPERATIONS	126,639	9,527
	<u>351,626</u>	

64%

FIVE YEAR SUMMARY

DATE	SALES (000\$)	NET INCOME	EPS
2002	347,096	29,193	1.69
2001	333,711	27,245	1.62
2000	324,108	27,355	1.67
1999	274,034	23,746	1.48
1998	249,752	22,230	1.38
GROWTH RATE	8.5	7.0	5.1

BALANCE SHEET

ANNUAL ASSETS (000\$)

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
CASH	2,998	2,421	4,307
RECEIVABLES	54,814	41,547	38,161
INVENTORIES	26,308	28,683	21,392
OTHER CURRENT ASSETS	12,851	10,573	36,660
TOTAL CURRENT ASSETS	96,971	83,224	100,520
PROP, PLANT & EQUIP	825,571	743,905	952,035
ACCUMULATED DEP	365,243	340,660	510,381
NET PROP & EQUIP	460,328	403,245	441,654
INVEST & ADV TO SUBS	35,493	29,847	3,988
DEFERRED CHARGES	36,103	27,758	25,442
TOTAL ASSETS	628,895	544,074	571,604

ANNUAL LIABILITIES (000\$)

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
NOTES PAYABLE	34,298	9,500	44,000
ACCOUNTS PAYABLE	32,039	22,156	28,792
CUR LONG TERM DEBT	NA	20,000	200
ACCRUED EXPENSES	3,161	3,110	10,680
OTHER CURRENT LIAB	11,049	7,013	3,565
TOTAL CURRENT LIAB	80,547	61,779	87,237
DEFERRED CHARGES/INC	62,450	58,821	100,618
LONG TERM DEBT	192,149	157,600	NA
OTHER LONG TERM LIAB	60,972	43,655	NA
TOTAL LIABILITIES	396,118	321,855	187,855
COMMON STOCK NET	227,370	216,292	383,749
OTHER EQUITIES	5,407	5,927	NA
SHAREHOLDER EQUITY	232,777	222,219	383,749
TOT LIAB & NET WORTH	628,895	544,074	571,604



# CINERGY NYSE:CIN

TIMELINESS 3

SAFETY 2

100% 3

2006-08 PROJECTIONS

	Price	Gain	Return
High	50	(+35%)	12%
Low	40	(+5%)	7%

## Insider Decisions

	A	S	O	N	D	J	F	M	A
To Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
To Sell	0	0	0	0	0	0	0	0	0

## Institutional Decisions

	3Q2002	4Q2002	1Q2003	Percent shares traded
To Buy	128	154	163	9
To Sell	137	111	108	6
Net Buy	100544	104845	112384	3

Cinergy was formed on October 24, 1994 through the merger of Cincinnati Gas & Electric and PSI Resources. Each common share of Cincinnati Gas & Electric was exchanged for 1.00 share of Cinergy, while each common share of PSI Resources was exchanged for 1.023 Cinergy shares. Pre-merger data are figures for Cincinnati Gas & Electric only and are not comparable to Cinergy data.

**CAPITAL STRUCTURE as of 3/31/03**  
Total Debt \$4623.5 mill. Due in 5 Yrs \$2374.5 mill.  
LT Debt \$3977.0 mill. LT Interest \$209.0 mill. (LT interest earned: 3.8x)  
Pension Assets-12/02 \$756.5 mill. Oblig.-\$1314.9 mill.  
Pfd Stock \$371.5 mill. Pfd Div'd \$24.7 mill.  
552,451 shs 3.5% to 6.875% (\$100 par), callable at \$100 to \$108 a sh.; 303,544 shs 4.16% to 4.32% \$25 par call at \$25; \$308.2 mill. preferred trust securities.

Common Stock 175,376,919 shs.  
MARKET CAP: \$6.6 billion (Large Cap)

## ELECTRIC OPERATING STATISTICS

	2000	2001	2002
% Change Retail Sales (kWh)	+3.8	-1.0	+8
Avg. Indust. Use (MWh)	2880	2751	2701
Avg. Indust. Rev. per kWh (¢)	3.79	4.10	4.01
Capacity at Peak (MW)	10996	11083	11249
Peak Load Summer (MW)	10141	11081	11133
Annual Load Factor (%)	63.8	NA	NA
% Change Customers (year-end)	+2.0	+1.3	+8

Fixed Charge Cov. (%) 365 328 282

ANNUAL RATES	2000	2001	2002
Change (per sh)	10.0%	25.0%	25.0%
Revenues	2.5%	3.0%	3.0%
"Cash Flow"	5%	2.0%	2.0%
Earnings	1.0%	5%	5%
Dividends	1.0%	5%	5%
Book Value	2.5%	2.5%	2.5%

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	1583	1770	2300	2789	8422
2001	3707	3642	3324	2250	12923
2002	2192	2471	3880	3417	11960
2003	1282	1320	1800	1638	6060
2004	1310	1350	1830	1690	6180

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2000	87	47	58	58	2.50
2001	75	51	80	69	2.75
2002	58	27	78	59	2.22
2003	80	45	80	60	2.65
2004	72	50	85	68	2.75

Cal-endar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
1999	45	45	45	45	1.80
2000	45	45	45	45	1.80
2001	45	45	45	45	1.80
2002	45	45	45	45	1.80
2003	46	46			

(A) EPS diluted. Excl. extraord. gains (losses): '93 (\$2.55); '96 (12c); '97 (69c); '98 (32c); '99 43c; '00 15c. Next eps. rpt. due late July.  
(B) Divs. historically paid mid-Feb. mid-May.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	VALUE LINE PUBL. INC.	06-08
Revenues per sh	19.89	18.84	19.23	20.57	27.59	37.04	37.36	52.98	81.07	70.91	34.20	34.35	Revenues per sh	34.80
"Cash Flow" per sh	3.87	3.13	3.98	3.99	4.75	4.02	4.34	4.87	5.15	4.59	5.18	5.35	"Cash Flow" per sh	6.00
Earnings per sh	2.16	1.31	2.22	2.19	2.30	1.97	2.10	2.50	2.75	2.22	2.85	2.75	Earnings per sh	3.05
Div'd Decl'd per sh	1.68	1.72	1.72	1.74	1.80	1.80	1.80	1.80	1.80	1.80	1.84	1.88	Div'd Decl'd per sh	2.00
Cap'l Spending per sh	2.26	3.39	2.06	2.05	2.08	2.32	2.43	3.27	5.31	5.08	4.25	3.60	Cap'l Spending per sh	2.95
Book Value per sh	17.25	15.56	16.17	16.39	16.10	16.02	16.70	17.36	18.45	19.53	21.00	22.05	Book Value per sh	25.40
Common Shs Outst'g	88.06	155.20	157.67	157.68	157.74	158.56	158.92	158.97	159.40	168.86	177.10	179.80	Common Shs Outst'g	187.90
Avg Ann'l P/E Ratio	12.5	11.3	11.9	14.1	14.9	17.8	14.2	11.0	11.7	15.0	15.0	15.0	Avg Ann'l P/E Ratio	15.0
Relative P/E Ratio	74	11	80	88	86	92	81	72	60	82	82	82	Relative P/E Ratio	1.00
Avg Ann'l Div'd Yield	6.2%	7.4%	6.5%	5.6%	5.3%	5.2%	6.1%	6.6%	5.6%	5.4%	5.4%	5.4%	Avg Ann'l Div'd Yield	4.4%
Revenues (\$mill)	1751.7	2324.2	3031.4	3242.7	4352.8	5876.3	5937.9	8422.0	12923	11960	6060	6180	Revenues (\$mill)	6540
Net Profit (\$mill)	214.0	228.7	378.3	369.0	472.0	318.1	340.8	404.1	446.8	364.0	485	515	Net Profit (\$mill)	595
Income Tax Rate	31.7%	40.2%	36.7%	37.2%	34.5%	26.3%	38.0%	36.4%	30.2%	36.0%	36.0%	36.0%	Income Tax Rate	36.0%
AFUDC % to Net Profit	3.1%	5.2%	2.7%	2.0%	1.2%	5%	1.2%	2.0%	7.3%	5.8%	5.0%	4.0%	AFUDC % to Net Profit	3.0%
Long-Term Debt Ratio	49.7%	48.4%	46.3%	47.7%	44.2%	49.7%	52.1%	50.2%	52.1%	52.7%	50.0%	48.0%	Long-Term Debt Ratio	43.0%
Common Equity Ratio	41.3%	43.1%	46.6%	48.6%	52.2%	48.5%	46.3%	48.2%	42.6%	42.5%	45.5%	47.5%	Common Equity Ratio	53.0%
Total Capital (\$mill)	3678.3	566.9	5467.5	5313.7	4868.1	5238.3	5735.6	5728.2	6907.4	7745.3	8175	8315	Total Capital (\$mill)	9020
Net Plant (\$mill)	3785.6	6149.3	6251.1	6289.6	6297.1	6344.5	6417.5	6630.4	8236.9	8648.7	8960	9140	Net Plant (\$mill)	9200
Return on Total Cap'l	7.9%	5.7%	8.9%	8.7%	11.6%	7.7%	7.7%	8.4%	7.9%	6.1%	7.5%	7.5%	Return on Total Cap'l	8.0%
Return on Shr. Equity	11.6%	12.9%	13.3%	17.4%	21.3%	12.4%	14.2%	13.5%	9.3%	12.0%	12.0%	12.0%	Return on Shr. Equity	11.5%
Return on Com Equity	12.4%	13.6%	13.4%	18.1%	12.3%	12.6%	14.5%	15.0%	10.9%	12.5%	12.5%	12.5%	Return on Com Equity	12.0%
Retained to Com Eq	2.8%	1.4%	3.1%	2.9%	6.3%	1.1%	1.9%	4.1%	5.3%	1.3%	4.0%	4.0%	Retained to Com Eq	4.0%
All Div's to Net Prof	80%	79%	81%	53%	91%	86%	72%	65%	83%	71%	70%	70%	All Div's to Net Prof	67%

**BUSINESS:** Cinergy Corp. is a holding company formed through the merger of Cincinnati Gas & Electric and PSI Resources. Supplies approx. 85% of revs.) to 1,500,000 customers, natural gas (15%) to 450,000 customers, in Ohio, Kentucky, and Indiana. Elect. (Gas) revs. resid. 43% (66%), comm. 28% (26%); indust. 25% (4%); other 4% (4%). The primary metal and chemical industries

Cinergy's capital budget soared in 2001, and will remain high through 2003, largely because of the need to comply with the U.S. Environmental Protection Agency's directive to reduce nitrogen oxide emissions at the company's coal-fired plants. EPA had filed suit against CIN for noncompliance with The Clean Air Act and seeks \$27,500 per day for each violation since March, 2000. To meet EPA requirements, management converted its Noblesville coal-burning unit to a gas burner and is making similar changes at nine small coal plants. The bulk of the \$800 million outlays to lower pollution and upgrade nitrogen oxide reduction technology is near completion and should be finalized next year. Construction spending will then decline, and CIN should be able to induce the EPA to drop its lawsuit.

The company has lowered its rate request in Indiana by \$25 million, to \$200 million. The revised amount reflects an updated evaluation of the utility's needs. The application seeks recovery of the \$376 million purchase of two natural gas-fired units from CIN's unregulated affiliate, the repowering of the Noblesville

are the largest customers. Fuel costs: 38% of revenues. '02 deprec. rate: 3.0%. Est'd plant age: 12 years. Fuels: coal, 87%; natural gas, 8%; other, 5%. Has 7,823 employees, 55,637 common stockholders. Chairman, President & CEO: James E. Rogers, Inc.; Data-ware. Address: 139 East 4th St., Cincinnati, OH 45202. Tel.: 513-381-2000. Internet: www.cinergy.com

unit, and improvements to the transmission system. In addition, some \$68 million is being sought for environmental expenditures. Under Indiana law, a portion of this amount will be phased in prior to 2004 for preapproved projects. A regulatory order on the petition is due in February. Earnings are on an upward path. Positives include a reduced headcount resulting from last year's retirement program, a likely 1%-2% rise in retail energy sales, and a full year of the May, 2002 gas rate increase in Ohio. But these gains will be pared somewhat by the dilutive effect of more common shares outstanding and higher pension and medical costs. On balance, we look for 2003 earnings of \$2.65 a share. A likely rate hike in Indiana suggests improved results next year. Income-oriented investors might consider these shares. The yield is a full percentage point above the industry norm. Too, a reduction in environmental spending and our projection of steady earnings growth to 2006-2008 should allow increased dividends at a rate a cut above that of the group.

Arthur H. Medalie July 4, 2003

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	25
Earnings Predictability	90

To subscribe call 1-800-833-0046.

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SOUTHERN CO

DESCRIPTION OF BUSINESS: THE GROUP'S PRINCIPAL ACTIVITIES ARE THE ACQUISITION, DEVELOPMENT, BUILDING, OWNERSHIP, AND OPERATION OF POWER PRODUCTION AND DELIVERY FACILITIES. THE GROUP OWNS GENERATING PLANTS AND OTHER SOURCES OF POWER THAT ARE INTERCONNECTED BY TRANSMISSION FACILITIES SUPPORTED BY HEAVY-DUTY HIGH VOLTAGE LINES. THE GROUP ALSO PROVIDES ENERGY-RELATED SERVICES TO UTILITIES AND INDUSTRIAL COMPANIES. THE GROUP OPERATES THROUGH TWO SEGMENTS NAMELY: INTEGRATED SOUTHEAST UTILITIES AND OTHER. INTEGRATED SOUTHEAST UTILITIES PROVIDE ELECTRIC SERVICES IN THE STATES OF ALABAMA, GEORGIA, FLORIDA AND MISSISSIPPI. THE OTHER SEGMENT PROVIDES TELECOMMUNICATIONS, ENERGY PRODUCTS AND SERVICES AND LEASING AND FINANCING SERVICES. ELECTRIC SERVICES ACCOUNTED FOR 97% OF 2002 REVENUES AND OTHER, 3%.

PRELIMINARY EARNINGS DATA

ITEMS	VALUES	PERIOD	NEWS DATE
Basic EPS	0.41	1Q	05/05/2003
Primary EPS	0.28	4Q	01/20/1998
Primary EPS	1.42	12M	01/20/1998
Fully Diluted EPS	0.41	1Q	05/05/2003
Common Shares Outstanding	720,957,179	1Q	05/21/2003
Net Sales	2,553,000,000	1Q	05/05/2003
Operating Profit	588,083,000	1Q	05/21/2003
Pre-Tax Income	419,000,000	1Q	05/05/2003
Net Income	298,000,000	1Q	05/05/2003
Total Current Assets	2,922,000,000	1Q	05/21/2003
Total Assets	32,850,000,000	1Q	05/21/2003
Total Current Liabilities	4,822,000,000	1Q	05/21/2003
Stockholder's Equity	8,871,000,000	1Q	05/21/2003
Gain(Loss) from Disc Oprs	367,000	1Q	05/21/2003
WtdAvg ComStock(Basic)	718,943,000	1Q	05/21/2003
WtdAvg ComStock(Primary)	691,000,000	4Q	01/20/1998
WtdAvg ComStock(Primary)	685,000,000	12M	01/20/1998
WtdAvg ComStock(Fully Diluted)	724,891,000	1Q	05/21/2003

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FPL GROUP INC

DESCRIPTION OF BUSINESS: THE GROUP'S PRINCIPAL ACTIVITY IS TO GENERATE, TRANSMIT, DISTRIBUTE AND MARKET ELECTRIC ENERGY THROUGH SUBSIDIARIES: FLORIDA POWER AND LIGHT COMPANY AND FLORIDA POWER AND LIGHT COMPANY GROUP CAPITAL. THE GROUP SUPPLIES ELECTRIC SERVICES TO APPROXIMATELY 4.0 MILLION CUSTOMERS AND TO MOST OF THE EAST AND LOWER WEST COASTS OF FLORIDA. FPL GROUP CAPITAL HOLDS THE CAPITAL STOCK AND PROVIDES FUNDING FOR THE OPERATING SUBSIDIARIES OTHER THAN FPL. OTHER FPL GROUP OPERATIONS INCLUDE SALE OF WHOLESALE FIBER-OPTIC NETWORK CAPACITY TO FPL AND OTHER NEW AND EXISTING CUSTOMERS, PRIMARILY TELEPHONE, CABLE TELEVISION, INTERNET AND OTHER TELECOMMUNICATIONS COMPANIES. THE GROUP OPERATES SOLELY IN THE DOMESTIC MARKET.

SEGMENT DATA	(SOURCE: 10-K 12/31/2002)	SALES (000S)	OP INCOME
FPL		7,378,000	717,000
FPL ENERGY	59% -	829,000	53,000
OTHER		104,000	-75,000
		<u>8,311,000</u>	

FIVE YEAR SUMMARY			
DATE	SALES (000\$)	NET INCOME	EPS
2002	8,311,000	473,000	4.02
2001	8,326,000	781,000	4.63
2000	7,062,000	704,000	4.14
1999	6,438,000	697,000	4.07
1998	6,661,000	664,000	3.85
GROWTH RATE	5.6	-8.1	1.0

PRELIMINARY EARNINGS DATA			
ITEMS	VALUES	PERIOD	NEWS DATE
Basic EPS	3.93	9M	05/24/2003
Primary EPS	0.52	4Q	01/15/1998
Primary EPS	3.57	12M	01/15/1998
Fully Diluted EPS	3.93	9M	05/24/2003
Common Shares Outstanding	183,288,175	1Q	05/15/2003



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

6. In reference to Dr. Weaver's assumption in a footnote on Schedule 12 that LG&E and KU would have a B++ Value Line Financial Strength Rating:
- a. Provide a complete explanation of the basis for this assumption.
  - b. Provide any data or calculations used by Dr. Weaver in reaching this conclusion.

Answer:

a. As stated on page 23, lines 11 through 14, the Financial Strength Rating is an assessment of financial leverage, business risk, company size and other factors made by Value Line analysts for each of the companies they follow. With respect to financial leverage, three of the twenty-one companies have an "A" rating and one of the companies has an "A+" rating. These four companies have an equity to total capital percentage of between 40.6% and 50.7% and three of these companies have a percent electric revenues between 85% and 95%.

KU's equity ratio exceeds the equity ratio of the four "A" or "A+" rated companies. The two companies with equity ratios greater than KU are rated "B" or "B++". KU has a high percent of electric sales so it would be in an "A" or "A+" range for this category. There is little business risk and the electric companies would be similar with regard to this measure. KU is a relatively small company and this would place it in a "B" category. I do not know what the other factors that the analysts would consider. It is my judgment that KU would have a Financial Strength Rating of "B++."

LG&E's equity ratio is within the range of the ratios for the four companies with an "A" to "A+" range. LG&E has a lower percent electric sales than three of the four companies in the "A" to "A+" range. It too is a relatively small company. It is my judgment that it would also have a "B++" Financial Strength Rating.





Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

7. Separately for each column (i.e., Financial Strength Rating, Equity Ratio, Percent Electric Revenues and Average) on Schedule 12:

- a. Provide an explanation of why each factor was used.
- b. Indicate whether a higher number in the column indicates higher or lower risk to the company in question and explain how Dr. Weaver reaches this conclusion.

Answer:

a. The Value Line Financial Strength Rating, as stated on page 23 in the testimony in lines 11 –14, “is an assessment of financial leverage, business risk, company size, and other factors made by Value Line analysts for each of the companies that they follow.” Companies that have a similar Financial Strength Rating in the opinion of the Value Line analysts would be somewhat similar to each other with respect to these factors. Equity to total capital was used because it too is a measure of financial risks. These were used because both KU and LG&E have higher equity ratios than most of the companies in the selection pool and it is important to capture this extremely low financial risk. Percent electric revenues is an important measure to obtain a group of companies that are as similar as possible to one another. Many electric companies have diversified their operations since the advent of deregulation. Eleven of the 21 companies in the selection pool derive less than 70% of their sales revenues from electric sales. The objective of company selection is to obtain companies that are as similar as possible to KU and LG&E. As indicated at the top of page 23 in the testimony, no two companies are exact clones of one another. These criteria assure that the companies are as similar as possible to KU and LG&E so that the market data reflects the return on equity of companies that have similar risk, assure the financial integrity of KU and LG&E, and enable these companies to attract capital.

b. The numbers in the columns were not used as absolute measures of risk. They were used to gauge similarity.



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
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8. In reference to Dr. Weaver's statement on page 12, lines 19-20, indicate why the interest rates on utility bonds might increase by an amount greater than Treasury notes might increase.

Answer:

The returns required for a given level of risk have a non-linear relationship. Each investor has his own set of risk/return tradeoffs and for risk averse investors, as risk increases, the amount of expected return required to attract their investment increases at an increasing rate.



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9. In reference to Schedules 17-28, provide the interest, dividends and earnings figures used in the calculations for each company.

Answer:

<u>Sch. / Yr.</u>	<u>Company</u>	<u>Interest</u>	<u>Dividends</u>	<u>Earnings</u>
17 01	Cinergy	265,792	286,289	442,279
02		249,906	298,292	360,576
18 23 01	DTE	468,000	325,000	332,000
02		548,000	338,000	632,000
19 01	FPL	324,000	377,000	781,000
02		311,000	400,000	473,000
20 01	MGE	13,789	22,341	27,245
02		12,545	23,170	29,193
21 01	Southern	744,000	922,000	1, 262,000
02		684,000	958,000	1,318,000
22 01	Constellation	225,600	120,700	90,900
02		268,300	137,800	525,600
24 01	Empire	30,010	22,613	10,402
02		30,571	27,885	25,524
25 01	PNM	64,840	31,876	150,433
02		61,412	34,226	64,272
26 01	Progress	672,893	432,078	541,610
02		633,441	479,981	528,386
27 01	KU	34,024	32,756	96,414
02		25,688	2,256	93,384
28 01	LG&E	37,922	27,995	106,781
02		29,805	73,300	88,929

Note: Schedule 17 contained an error in the Quality of Earnings Measure. Attached is a new Schedule 17 with the change in bold print. Also attached is a new Schedule 16 with the change also in bold. Please make the following changes to the testimony:

Page 31, line 10: 3.06 should be 2.46

Page 36, line 12: 3.06 should be 2.46

Page 36, line 13: 3.06 should be 2.46

## Cash Flow Summary

Average Cash Flow Coverage of:				
Company	Interest	Dividends	Investing Activities	Quality of Earnings
<b>Kentucky Utilities:</b>				
Cinergy	4.34	2.92	0.79	2.19
DTE Energy	2.76	2.69	0.61	1.99
FPL Group Inc.	7.76	5.50	0.65	3.71
MGE Energy	6.05	2.94	1.88	2.38
Southern Company	4.67	2.77	0.91	2.02
Average	5.12	3.36	0.97	2.46
Kentucky Utilities	7.19	41.82	1.05	1.92
<b>LG&amp;E:</b>				
Constellation Energy	4.17	6.08	1.79	4.12
DTE Energy	2.76	2.69	0.61	1.99
Empire District	2.83	2.15	0.72	3.19
PNM Resources	4.32	6.56	0.64	1.84
Progress Energy	3.32	3.31	0.79	2.82
Average	3.48	4.16	0.91	2.79
LG&E	8.35	6.58	1.06	2.54

Source: Schedule 17 through 28.



**Cash Flow Analysis**  
**Cinergy Corp**  
 (thousands of dollars)

	2001	2002	Average
Cash Flow from Operating Activities	717,849	996,199	857,024
Cash Flow from Investing Activities	(1,567,099)	(889,408)	(1,228,254)
Cash Flow from Financing Activities	867,263	3,225	435,244
Change in Cash Flow	18,013	110,016	64,015
Cash Flow Coverage of Interest	3.70	4.99	4.34
Cash Flow Coverage of Total Dividends	2.51	3.34	2.92
Cash flow Coverage of Investing Activities	0.46	1.12	0.79
Quality of Earnings	1.62	2.76	2.19

Source: August 2003 Compact Disclosure



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10. In reference to the 8 percent interest rate discussed at page 28, line 17, indicate the basis for using this level of interest rate.

Answer:

KU and LG&E have an A1 bond rating by Merchant (Moody's). Schedule 4 shows that in January through August 2003, average yields on public utility bonds have ranged from 6.13% to 7.58%. Schedule 5 shows that 10-year Treasury Bonds are expected to increase by 60 basis points in 2004 over 2003. Longer termed public bonds will increase by this or a greater amount in 2004. Therefore, 8% represents a reasonable estimate for assuming an increase in debt in 2004. Since it is higher than the rate at which KU and LG&E are currently obtaining debt capital, it also represents a conservative assumption.



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11. In reference to Schedules 29 and 30:
- a. For each factor that represents a 3-year average, provide the individual yearly figures for each company.
  - b. Explain how "Times Interest Earned" is calculated.
  - c. Provide the calculation of Times Interest Earned for DTE Energy, KU and LG&E.

Answer:

- a. A copy of the compact disclosure sheets that contain the data for each factor for each company.
- b. Earnings before interest and taxes divided by interest.

c.	<u>Company</u>	<u>2002</u>	<u>2001</u>	<u>2000</u>	<u>Avg.</u>
	DTE	2.05	1.47	2.42	1.98
	KU	6.74	5.52	4.74	5.67
	LG&E	5.83	5.49	5.05	5.46

Cinergy

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.50	0.39	0.38
CURRENT RATIO	0.85	0.66	0.77
SALES/CASH	53.51	116.32	85.36
SG & A/SALES	0.13	0.10	0.17
RECEIVABLES TURNOVER	9.15	11.57	5.11
RECEIVABLES DAYS SALES	39.33	31.11	70.40
INVENTORIES TURNOVER	37.03	53.91	52.10
INVENTORIES DAYS SALES	9.72	6.68	6.91
NET SALES/WORKING CAPITAL	-25.88	-12.19	-7.89
NET SALES/PLANT & EQUIPMENT	1.37	1.58	1.22
NET SALES/CURRENT ASSETS	4.62	6.25	2.39
NET SALES/TOTAL ASSETS	0.89	1.05	0.67
NET SALES/EMPLOYEES	1,512,114	1,473,231	992,718
TOTAL LIAB/TOTAL ASSETS	0.72	0.73	0.77
TOTAL LIAB/INVESTED CAPITAL	1.30	1.36	1.65
TOTAL LIAB/COMMON EQUITY	3.23	3.41	3.40
TIMES INTEREST EARNED	3.23	3.70	3.94
CURRENT DEBT/EQUITY	0.06	0.05	0.01
LONG TERM DEBT/EQUITY	1.22	1.20	1.01
TOTAL DEBT/EQUITY	1.27	1.25	1.02
TOTAL ASSETS/EQUITY	3.96	4.09	4.32
PRETAX INC/NET SALES	0.05	0.06	0.08
PRETAX INC/TOTAL ASSETS	0.04	0.06	0.05
PRETAX INC/INVESTED CAPITAL	0.07	0.11	0.11
PRETAX INC/COMMON EQUITY	0.17	0.24	0.24
NET INCOME/NET SALES	0.03	0.03	0.05
NET INCOME/TOTAL ASSETS	0.03	0.04	0.03
NET INCOME/INVESTED CAPITAL	0.05	0.07	0.07
NET INCOME/COMMON EQUITY	0.11	0.15	0.14



DTE

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.49	0.50	0.35
CURRENT RATIO	0.86	0.88	0.81
SALES/CASH	18.24	13.63	30.51
SG & A/SALES	0.41	0.36	0.37
RECEIVABLES TURNOVER	5.63	5.87	8.25
RECEIVABLES DAYS SALES	63.90	61.36	43.62
INVENTORIES TURNOVER	11.72	11.47	13.84
INVENTORIES DAYS SALES	30.72	31.39	26.00
NET SALES/WORKING CAPITAL	-15.03	-16.64	-11.74
NET SALES/PLANT & EQUIPMENT	0.69	0.61	0.63
NET SALES/CURRENT ASSETS	2.44	2.34	2.81
NET SALES/TOTAL ASSETS	0.35	0.31	0.37
NET SALES/EMPLOYEES	608,128	525,023	507,218
TOTAL LIAB/TOTAL ASSETS	0.76	0.76	0.68
TOTAL LIAB/INVESTED CAPITAL	2.19	2.16	1.07
TOTAL LIAB/COMMON EQUITY	3.21	3.11	2.16
TIMES INTEREST EARNED	2.05	1.47	2.42
CURRENT DEBT/EQUITY	NA	NA	0.07
LONG TERM DEBT/EQUITY	0.45	0.42	0.97
TOTAL DEBT/EQUITY	0.45	0.42	1.05
TOTAL ASSETS/EQUITY	4.21	4.11	3.16
PRETAX INC/NET SALES	0.08	0.04	0.10
PRETAX INC/TOTAL ASSETS	0.03	0.01	0.04
PRETAX INC/INVESTED CAPITAL	0.09	0.03	0.06
PRETAX INC/COMMON EQUITY	0.13	0.05	0.12
NET INCOME/NET SALES	0.09	0.06	0.10
NET INCOME/TOTAL ASSETS	0.03	0.02	0.04
NET INCOME/INVESTED CAPITAL	0.09	0.05	0.06
NET INCOME/COMMON EQUITY	0.14	0.07	0.12

*FPL Group*

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.23	0.20	0.28
CURRENT RATIO	0.49	0.44	0.64
SALES/CASH	31.24	101.54	54.90
SG & A/SALES	0.27	0.24	0.26
RECEIVABLES TURNOVER	12.95	13.09	11.12
RECEIVABLES DAYS SALES	27.81	27.50	32.38
INVENTORIES TURNOVER	18.55	23.86	19.14
INVENTORIES DAYS SALES	19.41	15.09	18.81
NET SALES/WORKING CAPITAL	-4.15	-4.09	-7.21
NET SALES/PLANT & EQUIPMENT	0.58	0.71	0.71
NET SALES/CURRENT ASSETS	4.36	5.20	3.98
NET SALES/TOTAL ASSETS	0.42	0.48	0.46
NET SALES/EMPLOYEES	864,648	853,336	719,862
TOTAL LIAB/TOTAL ASSETS	0.67	0.64	0.62
TOTAL LIAB/INVESTED CAPITAL	1.06	1.01	0.97
TOTAL LIAB/COMMON EQUITY	2.06	1.87	1.70
TIMES INTEREST EARNED	4.02	4.58	4.74
CURRENT DEBT/EQUITY	0.02	0.01	NA
LONG TERM DEBT/EQUITY	0.88	0.78	0.68
TOTAL DEBT/EQUITY	0.89	0.78	0.68
TOTAL ASSETS/EQUITY	2.99	2.80	2.63
PRETAX INC/NET SALES	0.11	0.14	0.15
PRETAX INC/TOTAL ASSETS	0.05	0.07	0.07
PRETAX INC/INVESTED CAPITAL	0.08	0.10	0.11
PRETAX INC/COMMON EQUITY	0.15	0.19	0.19
NET INCOME/NET SALES	0.06	0.09	0.10
NET INCOME/TOTAL ASSETS	0.02	0.04	0.05
NET INCOME/INVESTED CAPITAL	0.04	0.07	0.07
NET INCOME/COMMON EQUITY	0.07	0.13	0.13

176E

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.72	0.71	0.49
CURRENT RATIO	1.20	1.35	1.15
SALES/CASH	115.78	137.84	75.25
SG & A/SALES	0.30	0.31	0.31
RECEIVABLES TURNOVER	6.33	8.03	8.49
RECEIVABLES DAYS SALES	56.85	44.82	42.39
INVENTORIES TURNOVER	13.19	11.63	15.15
INVENTORIES DAYS SALES	27.29	30.94	23.76
NET SALES/WORKING CAPITAL	21.13	15.56	24.40
NET SALES/PLANT & EQUIPMENT	0.75	0.83	0.73
NET SALES/CURRENT ASSETS	3.58	4.01	3.22
NET SALES/TOTAL ASSETS	0.55	0.61	0.57
NET SALES/EMPLOYEES	508,193	493,655	467,688
TOTAL LIAB/TOTAL ASSETS	0.63	0.59	0.33
TOTAL LIAB/INVESTED CAPITAL	0.93	0.85	0.49
TOTAL LIAB/COMMON EQUITY	1.70	1.45	0.49
TIMES INTEREST EARNED	4.82	4.14	4.01
CURRENT DEBT/EQUITY	NA	0.09	0.00
LONG TERM DEBT/EQUITY	0.83	0.71	NA
TOTAL DEBT/EQUITY	0.83	0.80	0.00
TOTAL ASSETS/EQUITY	2.70	2.45	1.49
PRETAX INC/NET SALES	0.14	0.13	0.13
PRETAX INC/TOTAL ASSETS	0.08	0.08	0.08
PRETAX INC/INVESTED CAPITAL	0.11	0.11	0.11
PRETAX INC/COMMON EQUITY	0.21	0.19	0.11
NET INCOME/NET SALES	0.08	0.08	0.08
NET INCOME/TOTAL ASSETS	0.05	0.05	0.05
NET INCOME/INVESTED CAPITAL	0.07	0.07	0.07
NET INCOME/COMMON EQUITY	0.13	0.12	0.07

*Southern*

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.35	0.41	0.41
CURRENT RATIO	0.59	0.68	0.76
SALES/CASH	38.64	28.69	49.10
SG & A/SALES	0.25	0.24	0.24
RECEIVABLES TURNOVER	7.00	7.12	7.67
RECEIVABLES DAYS SALES	51.39	50.59	46.92
INVENTORIES TURNOVER	12.59	10.76	14.34
INVENTORIES DAYS SALES	28.60	33.47	25.11
NET SALES/WORKING CAPITAL	-5.15	-7.15	-11.27
NET SALES/PLANT & EQUIPMENT	0.43	0.44	0.47
NET SALES/CURRENT ASSETS	3.56	3.44	3.56
NET SALES/TOTAL ASSETS	0.33	0.34	0.32
NET SALES/EMPLOYEES	402,972	NA	386,841
TOTAL LIAB/TOTAL ASSETS	0.64	0.64	0.57
TOTAL LIAB/INVESTED CAPITAL	1.15	1.16	0.97
TOTAL LIAB/COMMON EQUITY	3.24	3.38	2.22
TIMES INTEREST EARNED	3.70	3.25	2.90
CURRENT DEBT/EQUITY	NA	NA	0.01
LONG TERM DEBT/EQUITY	0.96	0.99	0.73
TOTAL DEBT/EQUITY	0.96	0.99	0.74
TOTAL ASSETS/EQUITY	3.53	3.58	2.92
PRETAX INC/NET SALES	0.17	0.17	0.16
PRETAX INC/TOTAL ASSETS	0.06	0.06	0.05
PRETAX INC/INVESTED CAPITAL	0.10	0.10	0.09
PRETAX INC/COMMON EQUITY	0.21	0.21	0.15
NET INCOME/NET SALES	0.12	0.12	0.13
NET INCOME/TOTAL ASSETS	0.04	0.04	0.04
NET INCOME/INVESTED CAPITAL	0.07	0.08	0.07
NET INCOME/COMMON EQUITY	0.15	0.16	0.12

# Constellation

## KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.96	0.28	0.63
CURRENT RATIO	1.33	0.53	0.77
SALES/CASH	6.80	15.48	4.57
SG & A/SALES	0.06	0.12	0.06
RECEIVABLES TURNOVER	3.77	5.25	4.76
RECEIVABLES DAYS SALES	95.48	68.58	75.60
INVENTORIES TURNOVER	14.03	12.11	16.45
INVENTORIES DAYS SALES	25.65	29.74	21.89
NET SALES/WORKING CAPITAL	6.95	-2.32	-6.27
NET SALES/PLANT & EQUIPMENT	0.59	0.50	0.57
NET SALES/CURRENT ASSETS	1.74	2.05	1.91
NET SALES/TOTAL ASSETS	0.33	0.27	0.29
NET SALES/EMPLOYEES	540,575	421,609	483,897
TOTAL LIAB/TOTAL ASSETS	0.71	0.71	0.74
TOTAL LIAB/INVESTED CAPITAL	1.15	1.48	1.47
TOTAL LIAB/COMMON EQUITY	2.65	2.67	3.02
TIMES INTEREST EARNED	4.11	1.53	3.23
CURRENT DEBT/EQUITY	0.11	0.35	0.27
LONG TERM DEBT/EQUITY	1.14	0.67	0.94
TOTAL DEBT/EQUITY	1.24	1.02	1.21
TOTAL ASSETS/EQUITY	3.49	3.50	3.85
PRETAX INC/NET SALES	0.18	0.03	0.15
PRETAX INC/TOTAL ASSETS	0.06	0.01	0.04
PRETAX INC/INVESTED CAPITAL	0.10	0.02	0.09
PRETAX INC/COMMON EQUITY	0.22	0.03	0.18
NET INCOME/NET SALES	0.11	0.02	0.09
NET INCOME/TOTAL ASSETS	0.04	0.01	0.03
NET INCOME/INVESTED CAPITAL	0.06	0.01	0.05
NET INCOME/COMMON EQUITY	0.14	0.02	0.11

Empire

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.52	0.30	0.16
CURRENT RATIO	1.08	0.50	0.41
SALES/CASH	21.19	23.24	105.07
SG & A/SALES	0.19	0.19	0.17
RECEIVABLES TURNOVER	9.70	8.68	13.11
RECEIVABLES DAYS SALES	37.11	41.45	27.46
INVENTORIES TURNOVER	9.80	13.23	17.94
INVENTORIES DAYS SALES	36.75	27.21	20.07
NET SALES/WORKING CAPITAL	42.72	-3.77	-3.24
NET SALES/PLANT & EQUIPMENT	0.39	0.35	0.36
NET SALES/CURRENT ASSETS	3.23	3.77	4.71
NET SALES/TOTAL ASSETS	0.32	0.30	0.32
NET SALES/EMPLOYEES	386,241	431,527	433,982
TOTAL LIAB/TOTAL ASSETS	0.61	0.64	0.71
TOTAL LIAB/INVESTED CAPITAL	0.85	0.99	1.04
TOTAL LIAB/COMMON EQUITY	2.12	2.62	2.46
TIMES INTEREST EARNED	2.26	1.40	2.42
CURRENT DEBT/EQUITY	NA	0.14	0.08
LONG TERM DEBT/EQUITY	1.09	1.15	1.36
TOTAL DEBT/EQUITY	1.09	1.29	1.44
TOTAL ASSETS/EQUITY	2.95	3.32	3.46
PRETAX INC/NET SALES	0.13	0.04	0.13
PRETAX INC/TOTAL ASSETS	0.04	0.01	0.04
PRETAX INC/INVESTED CAPITAL	0.06	0.02	0.06
PRETAX INC/COMMON EQUITY	0.12	0.04	0.15
NET INCOME/NET SALES	0.08	0.04	0.09
NET INCOME/TOTAL ASSETS	0.03	0.01	0.03
NET INCOME/INVESTED CAPITAL	0.04	0.02	0.04
NET INCOME/COMMON EQUITY	0.08	0.04	0.10



PNM

KEY ANNUAL FINANCIAL RATIOS			
FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.53	0.66	0.95
CURRENT RATIO	0.89	1.06	1.40
SALES/CASH	14.03	31.83	14.96
SG & A/SALES	0.15	0.08	0.11
RECEIVABLES TURNOVER	9.28	15.92	6.76
RECEIVABLES DAYS SALES	38.78	22.62	53.27
INVENTORIES TURNOVER	31.40	64.13	44.64
INVENTORIES DAYS SALES	11.47	5.61	8.06
NET SALES/WORKING CAPITAL	-27.32	117.10	11.23
NET SALES/PLANT & EQUIPMENT	0.63	1.33	1.00
NET SALES/CURRENT ASSETS	3.34	6.64	3.18
NET SALES/TOTAL ASSETS	0.39	0.80	0.56
NET SALES/EMPLOYEES	440,134	874,698	604,152
TOTAL LIAB/TOTAL ASSETS	0.67	0.64	0.67
TOTAL LIAB/INVESTED CAPITAL	1.03	0.95	1.03
TOTAL LIAB/COMMON EQUITY	2.11	1.88	2.16
TIMES INTEREST EARNED	2.58	4.57	3.68
CURRENT DEBT/EQUITY	NA	NA	NA
LONG TERM DEBT/EQUITY	0.99	0.93	1.03
TOTAL DEBT/EQUITY	0.99	0.93	1.03
TOTAL ASSETS/EQUITY	3.07	2.84	3.13
PRETAX INC/NET SALES	0.08	0.10	0.11
PRETAX INC/TOTAL ASSETS	0.03	0.08	0.06
PRETAX INC/INVESTED CAPITAL	0.05	0.12	0.09
PRETAX INC/COMMON EQUITY	0.10	0.23	0.19
NET INCOME/NET SALES	0.05	0.06	0.06
NET INCOME/TOTAL ASSETS	0.02	0.05	0.03
NET INCOME/INVESTED CAPITAL	0.03	0.08	0.05
NET INCOME/COMMON EQUITY	0.07	0.15	0.11

*Progress*

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.37	0.30	0.18
CURRENT RATIO	1.04	0.84	0.47
SALES/CASH	129.49	150.54	37.21
SG & A/SALES	0.22	0.20	0.25
RECEIVABLES TURNOVER	8.26	8.26	4.07
RECEIVABLES DAYS SALES	43.61	43.58	88.44
INVENTORIES TURNOVER	9.08	9.28	8.95
INVENTORIES DAYS SALES	39.67	38.81	40.21
NET SALES/WORKING CAPITAL	65.18	-14.94	-1.25
NET SALES/PLANT & EQUIPMENT	0.63	0.70	0.34
NET SALES/CURRENT ASSETS	2.78	2.79	1.42
NET SALES/TOTAL ASSETS	0.37	0.39	0.19
NET SALES/EMPLOYEES	519,289	499,098	235,558
TOTAL LIAB/TOTAL ASSETS	0.68	0.71	0.73
TOTAL LIAB/INVESTED CAPITAL	0.88	1.01	1.29
TOTAL LIAB/COMMON EQUITY	2.18	2.46	2.74
TIMES INTEREST EARNED	1.62	1.57	3.78
CURRENT DEBT/EQUITY	0.04	0.11	0.03
LONG TERM DEBT/EQUITY	1.44	1.41	1.09
TOTAL DEBT/EQUITY	1.48	1.53	1.12
TOTAL ASSETS/EQUITY	3.15	3.43	3.71
PRETAX INC/NET SALES	0.05	0.05	0.18
PRETAX INC/TOTAL ASSETS	0.02	0.02	0.03
PRETAX INC/INVESTED CAPITAL	0.02	0.03	0.06
PRETAX INC/COMMON EQUITY	0.06	0.06	0.12
NET INCOME/NET SALES	0.07	0.07	0.13
NET INCOME/TOTAL ASSETS	0.02	0.03	0.02
NET INCOME/INVESTED CAPITAL	0.03	0.04	0.04
NET INCOME/COMMON EQUITY	0.08	0.09	0.09

KU

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.14	0.21	0.38
CURRENT RATIO	0.34	0.54	0.55
SALES/CASH	164.76	260.84	2,713.19
SG & A/SALES	0.18	0.15	0.15
RECEIVABLES TURNOVER	17.91	18.98	9.42
RECEIVABLES DAYS SALES	20.10	18.97	38.21
INVENTORIES TURNOVER	19.27	19.81	22.24
INVENTORIES DAYS SALES	18.68	18.17	16.19
NET SALES/WORKING CAPITAL	-3.40	-8.07	-8.08
NET SALES/PLANT & EQUIPMENT	0.51	0.54	0.54
NET SALES/CURRENT ASSETS	6.63	6.98	6.51
NET SALES/TOTAL ASSETS	0.44	0.47	0.49
NET SALES/EMPLOYEES	938,921	852,651	3,407,764
TOTAL LIAB/TOTAL ASSETS	0.57	0.58	0.59
TOTAL LIAB/INVESTED CAPITAL	0.95	0.87	0.90
TOTAL LIAB/COMMON EQUITY	1.41	1.43	1.54
TIMES INTEREST EARNED	6.74	5.52	4.74
CURRENT DEBT/EQUITY	0.18	0.07	0.08
LONG TERM DEBT/EQUITY	0.41	0.56	0.61
TOTAL DEBT/EQUITY	0.59	0.63	0.68
TOTAL ASSETS/EQUITY	2.34	2.36	2.45
PRETAX INC/NET SALES	0.17	0.18	0.17
PRETAX INC/TOTAL ASSETS	0.07	0.08	0.08
PRETAX INC/INVESTED CAPITAL	0.12	0.13	0.13
PRETAX INC/COMMON EQUITY	0.18	0.21	0.22
NET INCOME/NET SALES	0.11	0.11	0.11
NET INCOME/TOTAL ASSETS	0.05	0.05	0.05
NET INCOME/INVESTED CAPITAL	0.08	0.08	0.08
NET INCOME/COMMON EQUITY	0.11	0.13	0.14

LG+E

KEY ANNUAL FINANCIAL RATIOS

FISCAL YEAR ENDING	12/31/2002	12/31/2001	12/31/2000
QUICK RATIO	0.14	0.17	0.34
CURRENT RATIO	0.32	0.36	0.52
SALES/CASH	60.31	471.92	150.12
SG & A/SALES	0.22	0.19	0.16
RECEIVABLES TURNOVER	14.99	11.63	5.76
RECEIVABLES DAYS SALES	24.01	30.94	62.54
INVENTORIES TURNOVER	11.81	14.57	15.42
INVENTORIES DAYS SALES	30.47	24.71	23.34
NET SALES/WORKING CAPITAL	-2.43	-2.94	-3.85
NET SALES/PLANT & EQUIPMENT	0.48	0.49	0.52
NET SALES/CURRENT ASSETS	5.05	5.25	3.59
NET SALES/TOTAL ASSETS	0.40	0.41	0.44
NET SALES/EMPLOYEES	1,151,722	1,098,897	1,404,924
TOTAL LIAB/TOTAL ASSETS	0.64	0.62	0.61
TOTAL LIAB/INVESTED CAPITAL	1.30	1.16	1.10
TOTAL LIAB/COMMON EQUITY	1.96	1.81	1.74
TIMES INTEREST EARNED	5.83	5.49	5.05
CURRENT DEBT/EQUITY	0.31	0.26	0.28
LONG TERM DEBT/EQUITY	0.35	0.40	0.41
TOTAL DEBT/EQUITY	0.66	0.66	0.69
TOTAL ASSETS/EQUITY	2.76	2.62	2.55
PRETAX INC/NET SALES	0.14	0.17	0.18
PRETAX INC/TOTAL ASSETS	0.06	0.07	0.08
PRETAX INC/INVESTED CAPITAL	0.11	0.13	0.14
PRETAX INC/COMMON EQUITY	0.17	0.20	0.22
NET INCOME/NET SALES	0.09	0.11	0.11
NET INCOME/TOTAL ASSETS	0.03	0.04	0.05
NET INCOME/INVESTED CAPITAL	0.07	0.08	0.09
NET INCOME/COMMON EQUITY	0.11	0.13	0.14



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

12. In reference to Dr. Weaver's relative risk analysis on pages 36-37:
- a. In reaching the conclusion concerning the relative riskiness of KU and LG&E versus their respective comparison groups, did Dr. Weaver weight each factor equally?
  - b. If not, which factors were weighted more?
  - c. If the factors were not weighted equally, provide the weights Dr. Weaver placed on each of the factors.

Answer:

- a. I did not perform a mathematical calculation in which I weighted the factors differently. An explanation of how I considered the factors is contained on page 36, lines 36 – 40; and on page 37, lines 1 – 10.
- b. See response to a.
- c. See response to a.



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

13. In reference to Dr. Weaver's statement at page 42, lines 14-16 that the DCF constant growth model has greater use by participants in the capital market than the multi-stage DCF or the bond-yield-risk premium models:

a. Provide all studies, documents, surveys, etc. relied upon by Dr. Weaver in making this statement.

b. Does Dr. Weaver claim that the DCF constant growth model has greater use by participants in the capital market than the CAPM method? If so, provide all studies documents, surveys, etc. relied upon by Dr. Weaver to support this contention.

Answer:

a. I reached this conclusion based upon my experience teaching finance courses in managerial finance and in capital markets analysis. The multi-stage DCF and bond-yield-risk premium models are not covered as well in financial text books as are the constant growth DCF and the CAPM models. A great deal of the financial literature that deals with cost of equity analysis deals with the CAPM model.

b. No.





Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

14. In reference to Dr. Weaver's statement at page 42, lines 20-22:
- a. Define "quality of beta estimates."
  - b. Provide all texts, financial journal articles, etc. relied upon by Dr. Weaver in making this statement.

Answer:

- a. The "quality of beta estimates" refers to how closely an estimate for beta actually measures an actual beta. An estimate that is close to its actual value has better quality.
- b. Attached is chapter 3 from Modern Portfolio Theory, The Capital Asset Pricing Model and Arbitrage Pricing Theory: A User's Guide, second Edition by Diana R. Harrington. The References at the end of the chapter provide an excellent resource for studies on the quality of beta.

Capital Asset Pricing," *Journal of*  
341-60.

ing Model," *Journal of Fi-*

glewood Cliffs, N.J.: Prentice-

Security Returns, 1931-1979,"  
er 1982, p. 9.

ersification in a Three-Moment  
*itative Analysis*, 13 (December

other Opinion Regarding Diver-  
*of Financial Research*, 6 (Spring

es and Equity Security Pricing,"  
, 31-40.

*Investor*, July 1980, pp. 23-30.

## chapter

# 4

## Estimating Beta

In Chapter 1 we defined *beta* as a measure of the relative volatility of returns: as the average rate of return from the market moves up and down, what happens to the returns for a given asset? If the asset's returns tend to move up and down more dramatically than do the market returns, the asset is considered relatively more volatile—more risky—and it will have a higher beta. In the capital asset pricing model, beta is the sole asset-specific or portfolio-specific factor. At any given time the forecasts for the risk-free rate and the market premium are the same for every asset or portfolio. Beta alone links the investor's expectations of returns from the asset or portfolio with his or her expectations of returns from the market. Because beta is such a crucial element in the CAPM, its estimation must be accurate.

In this chapter we will look at what we know about estimating beta. To develop a beta forecast, practitioners and academics often extrapolate from history often using some form of regression analysis. Using historical data and regression analysis presents two main problems. The first problem is determining the best way to capture the important information contained in history. In this chapter we will examine the various methods used to calculate beta from historical data. Specifically, we will look at the effect that using different time periods, indexes, risk-free rates, estimation techniques, and holding periods has on beta estimates.

The second problem is the uncertainty over whether a historical beta is useful in forecasting risk. This problem is usually labeled *beta stability*. We will look at whether changes in beta (its instability) are the result of statistical problems or whether changes in beta represent true changes in the underlying risk of the asset. Thus, we will attempt to answer the question, Is a historically based beta stable enough to use as a proxy for expectations? We will conclude the chapter by considering some of the innovative ways developed by academics and practitioners to get better approximations of investors' expectations of an asset's (usually a stock's) systematic risk. In particular, we will look at some attempts that have been made to discover the underlying determinants of beta and to use those factors to predict beta.

Once again, the discussion will neither describe every piece of research nor summarize every article. Rather, this chapter will provide examples of what seem to be some of the most interesting and relevant work that has been done in the area.

To have some idea of the difficulties in making beta estimates, we need only look at the differences among betas estimated by popular beta services. *Beta services* are commercially available lists of betas produced by investment advisory services. Most of the betas shown in Exhibit 4-1 are from beta services and were calculated using historical returns. The exceptions are those provided by Wilshire and Barr Rosenberg Associates. These services use other firm-related historical data to calculate betas. The stocks whose betas are shown were arbitrarily chosen from the available data. Southern California Edison is interesting in that, in 1974, it was estimated to have above-average risk by Merrill Lynch and average risk by Value Line, Rosenberg, and Wilshire. The exhibit vividly demonstrates just how different beta estimates can be from different services, for different stocks, and at different points in time.

We might question the usefulness of beta when such different estimates can be made at the same point in time. Peterson (1972) did so and compared the betas published by four commercial producers—Levy, Value Line, Merrill Lynch, and Oliphant. He ranked the betas from each source and provided the rank-order correlations shown in Exhibit 4-2. A perfect correlation would be 1.00, and that would imply that each stock is ranked by the first service precisely as it is ranked by the second. Any correlation of less than 1.00 shows less than perfect agreement among the advisory services. Thus, we can see from Exhibit 4-2 that Merrill Lynch and Levy estimate the same ranking (but not the same beta) 56 percent of the time. Thus, not only beta but beta rankings can vary from one service to another.

It is important to note at this point that the behavior of beta is of interest to those who wish to test the ability of beta to explain returns

## Exhibit 4-1

## Betas Calculated by Investment Services for Selected Stocks

JANUARY 1974

	Barr Rosenberg	
	Short-Term Fundamen-	Long-Term Fundamen-
Merrill-Lynch	"	"
Market Model	"	"

ver whether a historical beta  
 usually labeled *beta stability*.  
 ability) are the result of  
 represent true changes  
 will attempt to answer the  
 enough to use as a proxy for  
 by considering some of the  
 d practitioners to get better  
 an asset's (usually a stock's)  
 at some attempts that have  
 minants of beta and to use

• describe every piece of re-  
this chapter will provide ex-  
most interesting and relevant

making beta estimates, we  
s estimated by popular beta  
ilable lists of betas produced  
e betas shown in Exhibit 4—  
using historical returns. The  
and Barr Rosenberg Associ-  
historical data to calculate  
were arbitrarily chosen from  
son is interesting in that, in  
ge risk by Merrill Lynch and  
Wilshire. The exhibit vividly  
ter can be from different ser-  
; in time.

beta when such different estimates. Peterson (1972) did so for commercial producers—Levy, who ranked the betas from each of the 100 companies shown in Exhibit 4-2. This would imply that each stock is ranked by the second. Any such perfect agreement among the 100 betas from Exhibit 4-2 that Merrill Lynch (but not the same beta) 56 different beta rankings can vary from

that the behavior of beta is of  
ity of beta to explain returns

**Exhibit 4-1**

### Betas Calculated by Investment Services for Selected Stocks

	JANUARY 1974					
	Barr Rosenberg					
	Merrill-Lynch (Adjusted)	Market Model (Adjusted)	Historical	Short-Term Fundamen- tal	Long-Term Fundamen- tal	Value Line
American Airlines	2.04 (1.69)	2.11 (1.01)	2.12	2.35	2.22	2.26
American Cyanamid	0.99 (1.00)	0.97 (0.98)	0.98	1.01	1.03	1.08
Houston Industries	1.08 (1.05)	1.12 (1.00)	1.21	1.12	1.10	0.77
San Diego Gas and Electric	0.99 (0.99)	0.98 (0.99)	1.03	0.87	0.90	0.73
Southern California Edison	1.33 (1.22)	1.33 (1.02)	1.32	0.99	0.99	0.98
DECEMBER 1972						
American Airlines	1.53 (1.35)	1.15 (0.77)	1.41	1.67	1.60	1.45
American Cyanamid	1.04 (0.84)	0.84 (0.76)	0.95	0.95	0.98	1.05
Houston Industries	1.00 (1.00)	0.69 (0.73)	1.05	1.08	0.98	0.90
San Diego Gas and Electric	0.61 (0.74)	0.48 (0.66)	0.65	0.82	0.88	0.70
Southern California Edison	0.72 (0.81)	0.52 (0.67)	0.72	0.82	0.84	0.80

Source: Diana P. Harrington, "Whose Beta Is Best?" *Financial Analysis Journal*, 39 (July-August 1983), 3.

Item 14, page 4

**Exhibit 4-2**  
**Beta Rank-Order Correlations**

	LEVY	VALUE LINE	MERRILL LYNCH	OLIPHANT
Levy	1.00	.61	.56	.48
Value Line		1.00	.77	.74
Merrill Lynch			1.00	.85
Oliphant				1.00

Source: D. Peterson, "Suggests Caution in the Use of Betas," *Financial Analysts Journal*, 28 (May-June 1972), 104.

(particularly realized returns), to forecast rates of return, or to evaluate investment portfolios. A review of the assumptions described in Chapter 2 shows that beta is present in the CAPM, but only as a measure of systematic risk—we do not have to restrict the behavior of beta to derive the CAPM.

### I. BETA BASICS

Returns for any security are not "caused" by the market. Rather, returns are driven by macroeconomic events. The effect that these economic events have on investors' expectations will depend on three main factors:

1. The responsiveness of the asset's or portfolio's returns to economic events. This responsiveness is measured as the covariance of the asset's rate of return with that of the market [covariance ( $R_j, R_m$ )].
2. The relationship of the firm's basic characteristics (such as its debt level) with the average characteristics of firms in the market [covariance ( $R_j, R_m$ )].
3. The general uncertainty attached by investors to macroeconomic events (such as changes in the level of oil prices), described as the variance of the market ( $R_m$ ).

The expected beta for a firm will change if any of the underlying relationships change. For example, if the firm increases its leverage relative to that of the market or undertakes unusually risky ventures, the change would be a real change in the systematic risk of the firm and should be reflected in beta.

### Estimating Beta

Mathematically, beta is

$$\beta_j = \frac{\text{covariance}(R_j, R_m)}{\text{variance}(R_m)}$$

where

variance ( $R_m$ ) = the uncertainty of the market rate of return

covariance ( $R_j, R_m$ ) = the response of the asset's rate of return ( $R_j$ ) to the market rate of return ( $R_m$ )

$j$  = an asset, security, or portfolio

$m$  = the market

Covariance itself is defined as

where

$\rho_{jm}$  = the correlation coefficient between the returns of  $j$  with the returns of the market  
 $\sigma$  = the standard deviation of the returns

The mathematical relationship is expectedational. Much of the difficulty comes as a result of compromise—expectedational factors. Most often the relationship of the stock's rate of return to common stock returns.

Using common stock returns using an index that represents a further compromise. The market is risky assets, but common stocks are not. While Chapter 6 will discuss this, it is useful to note that since data is in machine-readable form and thus easy to use, much of the focus of CAPM is toward explaining common stock returns.

### Basic Regression Technique

The simplest way to examine the relationship between the returns from any asset and those of the market is to plot the relationship over time. Exhibit

Item 14, page 5

Mathematically, beta is

$$\beta_j = \frac{\text{covariance } (R_j, R_m)}{\text{variance } (R_m)}$$

where

variance ( $R_m$ ) = the uncertainty attached to economic events

covariance ( $R_j, R_m$ ) = the responsiveness of an asset's rate of return ( $R_j$ ) to those things that also change the market's rate of return ( $R_m$ )

$j$  = an asset, stock, or portfolio

$m$  = the market

Covariance itself is defined as  $\rho_{jm}, \sigma_j, \sigma_m$

where

$\rho_{jm}$  = the correlation coefficient, a measure of the correlation of the returns of  $j$  with the returns of  $m$

$\sigma$  = the standard deviation of the returns

The mathematical relationship is fairly simple, but each variable is expectational. Much of the difficulty we have had in estimating beta has come as a result of compromise—of our using inadequate proxies for expectational factors. Most often the proxy has been the historical relationship of the stock's rate of return to that of a broad-based index of common stock returns.

Using common stock returns represents a major compromise, and using an index that represents only a portion of the stock market is a further compromise. The market portfolio should be a collection of all risky assets, but common stocks represent only one portion of the universe. While Chapter 6 will discuss this problem further, at this point it is useful to note that since data on common stock returns comes in machine-readable form and thus lends itself to use in computerized studies, much of the focus of CAPM empirical research has been directed toward explaining common stock returns.

### Basic Regression Technique

The simplest way to examine the historical relationship between the returns from any asset and those from the market is simply to plot the relationship over time. Exhibit 4-3 illustrates this method. At every

Correlations	
McRILL LYNCH	OLIPHANT
.56	.48
.77	.74
1.00	.85
	1.00

Financial Analysts Journal, 28 (May-

rates of return, or to evaluate options described in Chapter 1, but only as a measure of the behavior of beta to derive

S

by the market. Rather, returns effect that these economic depend on three main factors:

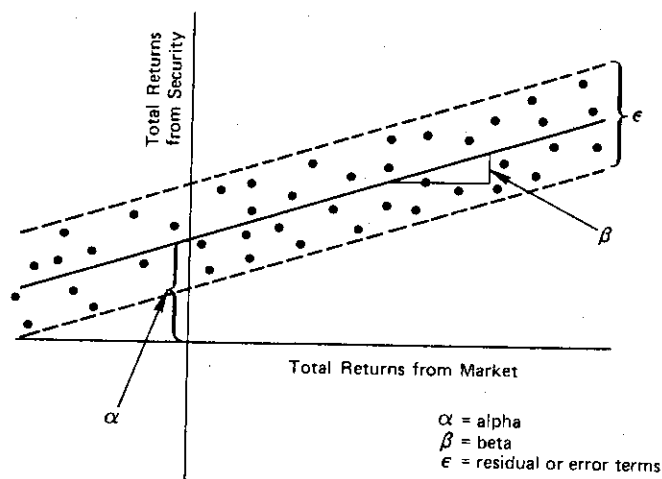
olio's returns to economic s. as the covariance of the he market [covariance ( $R_j, R_m$ )]. Characteristics (such as its debt ics of firms in the market [co-

y investors to macroeconomic of oil prices), described as the

any of the underlying rela- creases its leverage relative y risky ventures, the change k of the firm and should be

Item 14, page 6

Exhibit 4-3  
Security Characteristic Line



point in time (every interval), the return from the asset and that from the market are represented by a dot on the chart. To convert all the dots to a more manageable descriptive relationship, we could fit a line to the data. This line is called the *security characteristic line*. Now we can describe the relationship by using the formula for a line ( $y = a + bx$ ), the relationship that most of us learned in eighth-grade geometry.

The best-fitting line is one that will minimize the distance that each dot is from the line—the line that minimizes the squared errors. Thus, the method is called a *least-squares regression*. The intercept ( $a$  in the formula) is the minimum return from the asset if the return from the market were zero.<sup>1</sup> The slope ( $b$ ) is the incremental return expected from the asset as the market return becomes higher or lower.

Although this is the basic regression technique, those estimating beta from history use a somewhat more elegant version of the formula for a straight line. This version is called the *market model* and is written as follows:<sup>2</sup>

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \epsilon_j$$

<sup>1</sup>Here we have plotted the total returns from the market and the asset. If we had plotted the excess returns, each asset's and the market's returns less the risk-free rate of return, the line would have gone through the origin and the alpha would have been zero.

<sup>2</sup>This is the total return version of the market model. It can also be written  $R_{jt} - R_{ft} = \alpha_j + \beta_j (R_{mt} - R_{ft}) + \epsilon_j$ , which is the risk-premium version, where  $R_{ft}$  would be the risk-free rate of return.

#### Estimating Beta

where

$R$  = total returns<sup>3</sup>

$j$  = a firm or portfolio

$t$  = the time period

$m$  = the market

$\alpha$  = the intercept (or alpha) of the return from the asset when the return from the market is zero

$\epsilon$  = the errors or the residuals without any remaining influence

$\beta$  = the systematic risk (beta),

Because the market model many people presume that they model does not rely on any of the assumptions of the market model. It simply states that the relationship between the returns from the asset and the market returns is linear.

In relying on historical data, that history is an accurate predictor of the future or may not be true. Just how useful this question, let us look at the market model.

Exhibit 4-4 shows the results (using the S&P 500 as a proxy) for the capital gains from American Telephone and Telegraph from January 1974 to December 1979. Each data point is represented by a dot. We could use a line to fit the dots. Mathematically

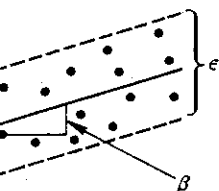
$$R_{ATT} =$$

Exhibit 4-5 provides the results for 1984. This plot does not follow the pattern of the plot followed. It would be much more difficult to follow. However, using the linear-regression method and the simplest calculators, we can calculate the beta.

<sup>3</sup>Least-squares analysis works best when the errors are normally distributed. Unfortunately, returns tend to be nonnormal.



line



from Market

$\alpha$  = alpha  
 $\beta$  = beta  
 $\epsilon$  = residual or error terms

from the asset and that from the chart. To convert all the dots to a line, we could fit a line to the characteristic line. Now we can define a line ( $y = a + bx$ ), the least-square geometry.

minimize the distance that each dot is from the line. Thus, we can find the best line.

The intercept ( $a$  in the equation) is the return from the asset if the return from the market was zero. It is the expected return from the asset if the return from the market was zero.

technique, those estimating the market model and is written as follows:

 $+ \epsilon_j$ 

the market and the asset. If we had the market's returns less the risk-free rate of return, the alpha would have been zero. The market model. It can also be written as the premium version, where  $R_f$  would be

where

$R$  = total returns<sup>3</sup>

$j$  = a firm or portfolio

$t$  = the time period

$m$  = the market

$\alpha$  = the intercept (or alpha) of the linear regression: the minimum return from the asset when the market return was zero (over all firms and over time the intercept should equal 0)

$\epsilon$  = the errors or the residuals (assumed to be normally distributed without any remaining information)

$\beta$  = the systematic risk (beta), the slope of the line

Because the market model and the CAPM look remarkably alike, many people presume that they are the same. They are not. The market model does not rely on any of the assumptions inherent in the CAPM. It simply states that the returns-generating process is a linear relationship between the returns from the asset and the returns from the market.

In relying on historical data, these regression techniques assume that history is an accurate predictor of the future. The assumption may or may not be true. Just how useful is history? To get some perspective on this question, let us look at two sets of betas calculated using the market model.

Exhibit 4-4 shows the results of plotting the total market returns (using the S&P 500 as a proxy) against the total returns (dividends plus capital gains) from American Telephone and Telegraph (AT&T) from January 1974 to December 1979. Once again, each piece of data is represented by a dot. We could use our own judgment or a computer to fit a line to the dots. Mathematically, the resulting line would be

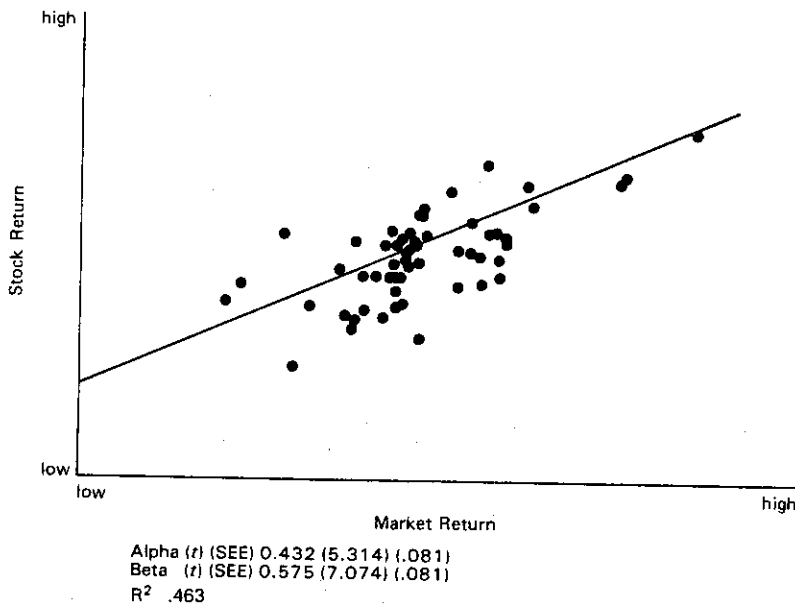
$$R_{ATT} = 0.432 + 0.575 (R_m)$$

Exhibit 4-5 provides the same sort of data for AT&T from 1980 to 1984. This plot does not follow the distinct pattern that the earlier AT&T plot followed. It would be much more difficult to fit a line confidently. However, using the linear-regression package available on all but the simplest calculators, we can calculate a beta. The question is, How useful

<sup>3</sup>Least-squares analysis works best when the independent and dependent variables are normally distributed. Unfortunately, both the risk-free rates of return and the market returns tend to be nonnormal.

Exhibit 4-4

## Returns of AT&amp;T vs. Returns of S&amp;P 500, 1974-79



are these AT&T data in making a forecast for the future? And how useful were the earlier AT&T data? Clearly, changes in the AT&T returns had a closer relationship to changes in the market returns from 1974 to 1979 than they did from 1980 to 1984.

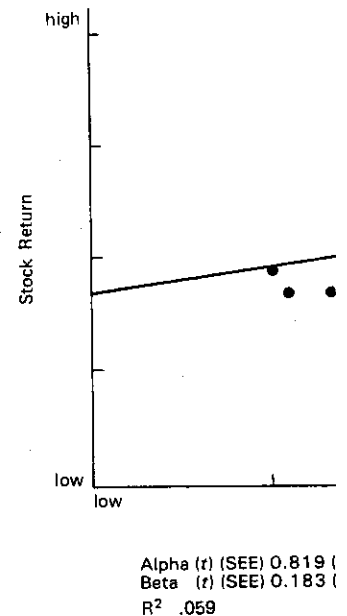
We need not look solely at the plotted data to determine the quality of the results. Using some simple tests, we can tell a great deal about the quality of the regression results. For instance, we can estimate the standard error of the estimated (SEE) beta or alpha. The standard error is like a standard deviation and gives us some idea of how much in error our estimate may be. For instance, if we had a beta of 0.80 and a standard error of 0.3, we could be more than 99 percent confident that the true beta lay in the range of 1.70 to  $-0.10$ .<sup>4</sup>

Furthermore, we can also determine the degree of confidence we have in the alpha, the beta, and the entire regression (the  $t$  and  $F$  tests) and can determine whether important factors have been omitted (the

<sup>4</sup>This is  $\pm 3$  standard deviations from the mean. Basic statistics and finance texts provide explanations of the normal distribution and the use of standard deviation.

E:

## Returns of AT&amp;T vs. F



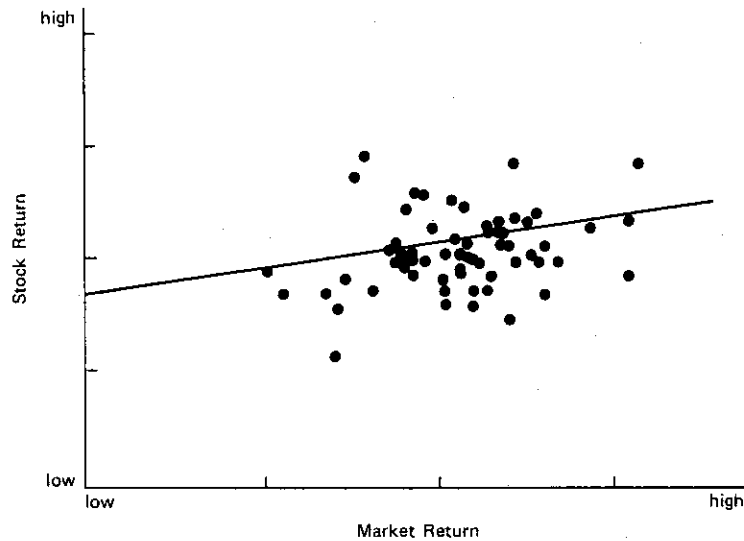
Durbin-Watson test).<sup>5</sup> We can use the dependent variable (here,  $\alpha$ ) and the independent variable (the market return) to estimate the data. The measure that describes the relationship between the dependent variable and the independent variable is the coefficient of determination, or  $R^2$ . In the case of the data in Exhibit 4-4 and 4-5, the more dispersed the data, the lower the  $R^2$ .

The earlier AT&T data had a higher  $R^2$  than the later data. AT&T's  $R^2$  of 0.46 is unacceptably low. This figure means that only 46 percent of the variation in AT&T's returns during this period is explained by the market return.

<sup>5</sup>For a simple description of these tests, see, for example, S. E. Wheelwright and S. Makridakis, *Forecasting and Time Series Analysis* (New York: John Wiley Interscience, 1987).

Exhibit 4-5

## Returns of AT&amp;T vs. Returns of S&amp;P 500, 1980-84



Alpha ( $t$ ) (SEE) 0.819 (8.424) (.097)  
 Beta ( $t$ ) (SEE) 0.183 (1.909) (.096)  
 $R^2$  .059

the future? And how useful  
 in the AT&T returns had a  
 returns from 1974 to 1979

determine the quality  
 can tell a great deal about  
 tance, we can estimate the  
 alpha. The standard error  
 idea of how much in error  
 beta of 0.80 and a standard  
 ent confident that the true

the degree of confidence we  
 regression (the  $t$  and  $F$  tests)  
 rs have been omitted (the

Basic statistics and finance texts  
 use of standard deviation.

Durbin-Watson test).<sup>5</sup> We can also describe how much of the activity of the dependent variable (here, our stock returns) was explained by the independent variable (the market returns)—that is, how well the line fits the data. The measure that describes this association is called the *coefficient of determination*, or  $R^2$ . If all the stock-return variation were coincident with market-return changes, the  $R^2$  would be 1.00. Smaller explanatory power would result in a lower  $R^2$ . As you can see in Exhibits 4-4 and 4-5, the more dispersed the dots, the lower the  $R^2$ .

The earlier AT&T data have a very good fit; the points are close to the line. AT&T's  $R^2$  of 0.46 is unusually high for a single stock. The AT&T data for the early 1980s, however, are widely spread and the  $R^2$  of 0.06 is very low. This figure means that almost none of the movements of AT&T's returns during this period were related to market changes. This

<sup>5</sup>For a simple description of these test procedures, see basic statistics textbooks, for example, S. E. Wheelwright and S. Makridakis, *Forecasting Methods for Management*, 2d ed. (New York: John Wiley Interscience, 1980).

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makes sense. During the early 1980s, AT&T underwent major changes. Its regulated businesses—with the exception of its long-distance business—were divested, its other markets were opened to significant competition, and the investing public became uncertain about what effect these changes would have on the company. While the divestment did not occur until January 1984, the fact that such a divestiture would occur was known much earlier. Thus, over this period, virtually all the returns were determined by nonsystematic factors and events. History provided some information about AT&T prior to 1980 but few clues about AT&T's future systematic risk in 1984.

The AT&T example is one that is especially interesting. Prior to the order to restructure itself, AT&T's stock had one of the most stable betas of all companies. It was a textbook example. If, however, in the early 1980s, you had used history to predict the future, without knowledge of the changed circumstances of the company, you could have made a major error.

The beta calculated for an average stock has an  $R^2$  of about 0.30. Perhaps we should be pleased that the market "explains" as much as 30 percent of the variance of a typical stock. By itself, this finding is significant but not surprising. Nevertheless, at least 70 percent remains to be explained. The question is, What else drives the price of individual securities? This question will be addressed later in this chapter, for we have not completed our examination of the problems in estimating beta from the history of returns.

### Practical Problems in Regression Methodology

As we have seen, one of the conceptual problems in using regression analysis is the assumption that historical data can help us predict the future. But the technique also has some practical problems: the results can vary widely, depending on our choice of input data.

In early work, Jacob (1971) found that betas generated using the market model depended on three factors: the historical period over which the beta was estimated, the average market return during the period studied, and whether the investor actually used the market model as a method for estimating betas. Since Jacob's work, several other factors have been identified: the market proxy chosen, the measurement intervals used within the holding period, and the form of the market model used. To calculate a historical beta, we must make choices for each of these factors. Let us look at the differences that can result when different choices are made for each factor.

### Estimating Beta

#### Measurement period

The length of time over which measurement or holding period typically significant sample, but it mation that does not reflect the future.

What is the effect of different measurement periods? Lerner (1972) looked specifically for a number of stocks by using monthly intervals. Using the New York Stock Exchange data, he found that the beta change significantly as the holding period changes. The results for other firms.

One further demonstration from the C. I. Mortgage Group. Peseau (1977) calculated the beta for 1971-74 and found that the beta for 1971-74 was significantly higher than the beta for 1971-75. Of course, the 1974 beta makes us suspicious of the results for other periods with higher  $R^2$ s is, none of the

Es

#### Empirical Beta

##### HOLDING PERIOD IN MONTHS

6
12
18
24
30
36
42
48
54
60
66
72
78
84

Source: W. J. Breen and E. H. Lerner, "On the Estimation of Beta in the Capital Asset Pricing Model," *Journal of Economics and Management Science*, Autumn 1972.

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underwent major changes. of its long-distance busi-  
ned to significant com-  
ertain about what effect  
While the divestment did not  
h a divestiture would occur  
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ives the price of individual  
later in this chapter, for we  
problems in estimating beta

using regression anal-  
n help us predict the future.  
blems: the results can vary  
ca.  
betas generated using the  
historical period over which  
et return during the period  
used the market model as a  
work, several other factors  
sen, the measurement inter-  
e form of the market model  
st make choices for each of  
at can result when different

### Measurement period

The length of time over which we calculate beta is important. The measurement or holding period must be long enough to allow a statistically significant sample, but it must not be so long as to include information that does not reflect the relationships likely to persist into the future.

What is the effect of different holding-period choices? Breen and Lerner (1972) looked specifically at this question. They calculated betas for a number of stocks by using the market model (simple linear regression), with monthly intervals. Exhibit 4-6 shows their results for IBM using the New York Stock Exchange Index for "the market." The betas change significantly as the holding period lengthens. They found similar results for other firms.

One further demonstration of the problem is of interest. Using data from the C. I. Mortgage Group, a firm that eventually declared bankruptcy, Peseau (1977) calculated betas for overlapping periods. We would expect the beta for 1971-74 and that for 1971-75 to be very similar because the latter period includes only one more year of data. Exhibit 4-7, however, demonstrates that the beta for 1971-74 differs dramatically from that for 1971-75. Of course, the low  $R^2$  associated with the 1971-74 beta makes us suspicious of the 1971-74 results. The beta shift among periods with higher  $R^2$ 's is, nonetheless, dramatic.

Exhibit 4-6

#### Empirical Beta Estimates for IBM

HOLDING PERIOD IN MONTHS	ALPHA	BETA
6	0.0079	2.2001
12	0.0251	1.1911
18	0.0394	0.9093
24	0.0398	1.0746
30	0.0847	0.7515
36	0.1241	0.5575
42	0.1453	0.4886
48	0.1293	0.3798
54	0.1384	0.4603
60	0.1889	0.4745
66	0.1418	0.8779
72	0.1295	0.7903
78	0.1508	0.4942
84	0.1209	0.6196

Source: W. J. Breen and E. H. Lerner, "On the Use of Beta in Regulatory Proceedings," *Bell Journal of Economics and Management Science*, Autumn 1972, p. 620.

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**Exhibit 4-7**  
**Betas for C. I. Mortgage Group**

TIME PERIOD	INTER-CEPT TERM	(t-VALUE)	BETA	(t-VALUE)	R <sup>2</sup>
1971-73	-.013	(- .38)	0.6	(1.96)*	.17
1971-74	-.045	(-1.96)	0.6	(1.29)	.04
1971-75	.010	(- .43)	2.6	(4.28)*	.32
1972-75	-.008	(- .29)	3.0	(4.69)*	.35
1972-76	-.016	(- .63)	3.0	(4.89)*	.33

\*Indicates significance.

Source: D. Peseau, "Direct Testimony before the Public Utility Commissioner, State of Oregon in the Matter of Portland General Electric Co." (Oregon Docket No. UF-3339, September 1977).

The length of the holding period does affect the beta. Again, the bad news is that the CAPM does not help us in choosing the appropriate holding period. History, as always, is a difficult proxy for the future. Alexander and Chervany (1980), studying beta stability, estimated the optimal interval over which to calculate a beta. Using data from 1950-67, they found smaller absolute errors were associated with a six-year horizon, although they were insignificantly different from four years, as shown in Exhibit 4-8. While these results are, of course, subject to verification for different time periods and samples,<sup>6</sup> many had previously believed, from a statistical point of view, that the longer the period the better the beta.

#### *Interval choice*

The length of the intervals within the chosen holding period can affect the beta estimate. For instance, we might use weekly, monthly, quarterly, or annual intervals within the chosen period. Many experts contend that the interval is irrelevant; however, Levhari and Levy (1977) demonstrated that the betas estimated using different intervals are different. Using data from 1948-68, they calculated betas for a number of stocks using intervals of from 1 to 30 months. Their results are shown in Exhibit 4-9. The betas for most of the stocks change considerably as the interval lengthens. Others, for instance Phillips and Segal (1975), found similar results.

<sup>6</sup>For different results see, for instance, Nicholas Gonedes, "Evidence on the Information Content of Accounting Numbers: Accounting-Based and Market-Based Estimates of Systematic Risk," *Journal of Financial and Quantitative Analysis*, 8 (June 1973), 407-43; and Jerome Baesel, "On the Assessment of Risk: Some Further Considerations," *Journal of Finance*, 29 (December 1974), 1491-94.

**Ex**  
**Means and Absolu**

PENTILE	1 Year	2 Yr
1: Mean	-2.2891	-1.
MAD	2.4978	2.
2: Mean	-.6746	-.
MAD	1.2616	1.
3: Mean	.0147	-.
MAD	1.1390	1.
4: Mean	.6190	.
MAD	1.4024	1.
5: Mean	2.1760	1.
MAD	2.5991	2.
Overall:		
Mean	-.0308	-.
MAD	1.7800	1.
H Tests:		
Mean	1135.22*	2.
MAD	453.35*	1.

\*Significant at the 5 percent level.

Source: Gordon J. Alexander and N. L. Chervany, *Journal of Financial and Quantitative Analysis*, 15 (M

More recently, Hawawini (1978) found that triweekly, and monthly betas (Exhibit 4-10) he found them to be lower than as to why this occurred. He believed that shares had large market values and that the interval was shortened. Beta estimates would decline as the interval was shortened. The argument had to do with whether the interval was shortened.

Perhaps even more interesting is the problem that was first discovered in a commission hearing considering the COMSAT (COMSAT). In that case, two experts testified that the SAT that would be used to estimate COMSAT's cost of equity would be based on a monthly interval (monthly) and the same estimates were not the same. The difference, as it were, was that one had used data to calculate beta, whereas the other had used a beta that can be very sensitive to the interval.

A beta can be very sensitive to the interval.

## Exhibit 4-8

## Means and Absolute Errors-Beta Forecasts

Group	BETA	(t-VALUE)	R <sup>2</sup>	ESTIMATION INTERVAL					
				PENTILE	1 Year	2 Years	4 Years	6 Years	9 Years
	0.6	(1.96)*	.17	1: Mean	-2.2891	-1.7272	-1.2204	-.4833	-.3740
	0.6	(1.29)	.04	MAD	2.4978	2.1435	1.7078	.7805	1.1480
	2.6	(4.28)*	.32	2: Mean	-.6746	-.2531	-.2869	-.3599	-.0235
	3.0	(4.69)*	.35	MAD	1.2616	1.0734	1.2523	.7221	1.1764
	3.0	(4.89)*	.33	3: Mean	.0147	-.1088	-.1982	-.0732	.4374
				MAD	1.1390	1.1751	1.4893	.6650	1.5144
				4: Mean	.6190	.5123	.1920	.2487	.1622
				MAD	1.4024	1.4212	1.6673	.8802	1.6028
				5: Mean	2.1760	1.0354	.5002	.8189	1.7987
				MAD	2.5991	2.0068	1.7991	1.0149	2.3389
				Overall:					
				Mean	-.0308	-.1083	-.2027	-.0302	.4002
				MAD	1.7800	1.5640	1.5831	.8125	1.5561
				H Tests:					
				Mean	1135.22*	295.21*	63.84*	67.19*	29.86*
				MAD	453.35*	108.84*	17.61*	14.20*	24.07*

\*Significant at the 5 percent level.

Source: Gordon J. Alexander and N. L. Chervany, "On the Estimation and Stability of Beta," *Journal of Financial and Quantitative Analysis*, 15 (March 1980), 129.

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us in choosing the appropriate  
difficult proxy for the future.  
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chosen holding period can  
e might use weekly, monthly,  
chosen period. Many experts  
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ce Phillips and Segal (1975),

as Gonedes, "Evidence on the Infor-  
y-Based and Market-Based Estimates  
titative Analysis, 8 (June 1973), 407-  
Some Further Considerations," *Jour-*

More recently, Hawawini (1983) estimated daily, weekly, biweekly, triweekly, and monthly betas over the period 1970-73. As shown in Exhibit 4-10 he found them to be quite different. Hawawini speculated as to why this occurred. He believed that, in general, companies whose shares had large market values would have betas that would increase as the interval was shortened. Betas of companies with smaller equity market values would decline as the interval shortened. In part, this movement had to do with whether their betas led or lagged the market.

Perhaps even more interesting than the interval problem is another problem that was first discovered in 1972 during a regulatory commission hearing considering the Communications Satellite Corporation (COMSAT). In that case, two expert witnesses calculated betas for COMSAT that would be used to establish comparable risk classes for estimating COMSAT's cost of equity. Each expert witness used the same interval (monthly) and the same total period (five years). Yet their beta estimates were not the same. The cause of the discrepancy, they discovered, was that one had used data from the third week of each month to calculate beta, whereas the other had used data from the fourth week.

A beta can be very sensitive to the interval chosen for the regres-

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## Exhibit 4-9

## The Estimate of the Systematic Risk of Ten Defensive Stocks

HORIZON (IN MONTHS)	IDAHO POWER CORP.	AMERI- CAN CAN CORP.	NATIONAL DAIRY PROD- UCTS	P. LORIL- LARD CORP.	AMERI- CAN TO- BACCO	BORDEN, INC.	ABBOTT LABORA- TORY	STAN- DARD BRANDS	GREY- HOUND CORP.
1	0.4282	0.5167	0.5281	0.6166	0.6296	0.6372	0.6576	0.6650	0.6752
2	0.4012	0.4886	0.4655	0.5711	0.4652	0.5912	0.5717	0.6147	0.6651
3	0.3796	0.3755	0.4475	0.3496	0.4993	0.5684	0.5892	0.5578	0.5773
4	0.3329	0.3311	0.3400	0.4881	0.3697	0.6142	0.5284	0.6397	0.5340
5	0.1881	0.2631	0.4428	0.2604	0.3283	0.3449	0.6319	0.4331	0.6709
6	0.3862	0.3402	0.4119	0.4253	0.3706	0.4330	0.3811	0.6112	0.5294
8	0.4322	0.0621	0.5309	0.4815	0.3020	0.4627	0.2398	0.7987	0.4907
10	0.2312	0.1236	0.4777	-0.0656	0.2438	0.4272	0.4729	0.5325	0.4800
12	0.2367	-0.0118	0.3511	-0.4615	0.0364	0.3390	0.4227	0.4289	0.6188
15	0.1556	0.0702	0.4544	-1.0612	-0.0365	-0.0561	0.1243	0.2008	0.1541
16	0.3016	0.2049	0.5016	-1.0387	0.1400	0.2723	0.1463	0.7473	0.1719
20	0.1142	-0.2563	0.3283	-1.1855	-0.1060	0.2336	0.0247	0.4002	0.2378
24	0.1068	-0.2690	0.3996	-2.0036	0.1657	0.0849	0.2474	0.3771	0.7826
30	0.2210	0.0101	0.2781	-2.8251	0.1187	0.1360	-0.3863	-0.0150	-0.5545

Source: D. Levhari and H. Levy, "The Capital Asset Pricing Model and the Investment Horizon," *Review of Economics and Statistics*, 59 (February 1977), 102.

## Exhibit 4-10

Betas Estimated on the Basis of Various Return Intervals,<sup>\*</sup>  
January 1970-December 1973

	MONTHLY BETA	TRI- WEEKLY BETA	BIWEEKLY BETA	WEEKLY BETA	DAILY BETA
Wayne-Gossard	0.976	0.692	0.986	0.654	0.459
Michigan Seamless Tube	0.973	0.883	0.917	0.784	0.433
Publicker Industries	1.521	1.491	1.513	1.277	1.006
Great Western United	2.496	2.311	2.122	1.911	1.442
Family Finance	1.268	1.324	1.212	0.821	0.795
Bobbie Brooks	1.874	1.889	1.818	1.592	1.405



10	0.2312	0.1236	0.777	-0.0656	0.2438	0.4272	0.4729	0.5327	0.4800
12	0.2367	-0.0118	511	-0.4615	0.0364	0.3390	0.4227	0.4281	0.6188
15	0.1556	0.0702	0.4544	-1.0612	-0.0365	-0.0561	0.1243	0.2008	0.1541
16	0.3016	0.2049	0.5016	-1.0387	0.1400	0.2723	0.1463	0.7473	0.1719
20	0.1142	-0.2563	0.3283	-1.1855	-0.1060	0.2336	0.0247	0.4002	0.2378
24	0.1068	-0.2690	0.3996	-2.0036	0.1657	0.0849	0.2474	0.3771	0.7826
30	0.2210	0.0101	0.2781	-2.8251	0.1187	0.1360	-0.3863	-0.0150	-0.5545

Source: D. Levhari and H. Levy, "The Capital Asset Pricing Model and the Investment Horizon," *Review of Economics and Statistics*, 59 (February 1977), 102.

#### Exhibit 4-10

### Betas Estimated on the Basis of Various Return Intervals,\* January 1970-December 1973

	MONTHLY BETA	TRI- WEEKLY			BIWEEKLY BETA	WEEKLY BETA	DAILY BETA
		BETA	BETA	BETA			
Wayne-Gossard	0.976	0.692	0.986	0.654	0.459		
Michigan Seamless Tube	0.973	0.883	0.917	0.784	0.433		
Publicker Industries	1.521	1.491	1.513	1.277	1.006		
Great Western United	2.496	2.311	2.122	1.911	1.442		
Family Finance	1.268	1.324	1.212	0.821	0.795		
Bobbie Brooks	1.874	1.889	1.818	1.592	1.405		
Monogram Industries	2.950	2.887	2.844	2.403	2.144		
Faberge	1.882	1.511	1.511	1.416	1.449		
Dillingham Corp.	1.004	1.164	0.990	0.750	0.725		
Vornado	2.329	1.628	2.170	1.823	1.765		
Big Three Industries	1.339	0.970	1.283	0.969	0.712		
Cabot Corp.	0.752	0.898	0.844	0.805	0.756		
General Development	1.423	1.628	1.657	1.382	1.358		
Addresso-Multigraph	2.094	2.341	1.566	1.414	1.733		
Great Western Financial	2.246	1.820	2.043	2.158	1.917		
Colgate-Palmolive	1.131	1.002	1.011	0.958	0.850		
Aluminium Co. of America	1.115	1.221	1.118	1.150	1.118		
Shell Oil	0.930	1.093	0.827	0.860	0.742		
S.S. Kresge	1.190	1.326	1.299	1.308	1.237		
Eastman Kodak	0.932	0.859	0.958	1.166	1.251		

\*Returns are measured as the logarithm of investment relatives. Market returns are those of the S&P 500. All betas are statistically significant at the 5 percent level.

Source: Gabriel Hawawini, "Why Beta Shifts as the Return Interval Changes," *Financial Analysts Journal*, 39 (May-June 1983), 74.

sion. The real difficulty is that we still must choose an estimation interval. Curiously enough, however, since we assumed all investors' horizons are identical, by choosing a particular interval we define the horizon of the market. In addition, we presume that over the horizon investors are not reallocating their portfolios; that is, they are not buying and/or selling their assets. However, the returns we are measuring are, in fact, driven by transactions that come as investors do reallocate their portfolios. Thus, we have direct evidence that all investors do not have the same horizon. How do we deal with such a conflict?

Since the CAPM gives us no guidelines for the choice of a horizon, those wishing to estimate a beta have looked elsewhere for direction. Sampling theory suggests that an adequate amount of data is needed to ensure a reasonably normal sample distribution. Since most of the hypotheses that are tested rest on the assumption of normalcy, as does the CAPM, sampling concerns (more is better) and computing constraints (less is better) have dictated the sample size. With the availability of monthly data in computer-readable form, and the need for a reasonably sized sample, the 60-observation, or five-year, estimation period became widely used. In fact it was so widely used many believed that it was *the* horizon. However, evidence about the importance of interval in the estimation of beta suggests that this standard may not be the best choice. We only know that we must have an adequate amount of data, without including old data that has little relevance to the current situation,<sup>7</sup> and to minimize the absolute deviations.

#### *The market proxy*

In earlier CAPM history, many believed that the index choice was not a particularly important issue.<sup>8</sup> Indexes were highly correlated;<sup>9</sup> hence, they were assumed to be virtually interchangeable.

Since that early lack of concern about choosing an index, our theoretical and statistical knowledge has become more sophisticated. We now know that if the proxy for the market is not fully diversified (is not a good reflection of the market for all risky assets), the market model will not properly distinguish between diversifiable and nondiversifiable risk. The result would be that we could have an informationless or wrong

<sup>7</sup>In addition, we must avoid some known problems, such as the Fisher effect: because some stocks are not widely traded, the end-of-week or end-of-the-day price can yield an inadequate estimate of the true price, thus biasing the estimated beta.

<sup>8</sup>See S. C. Myers, "The Application of Finance Theory to Public Utility Rate Cases," *Bell Journal of Economics and Management Science*, 3 (Spring 1972), 58-97.

<sup>9</sup>Remember that correlation is the degree of relationship between indexes. If returns moved together exactly, we would have a perfect correlation of 1.0. If they were perfectly negatively related, the correlation would be -1.0.

beta, or we could believe that non than it actually was. Correlation a alize index choice. But this metho highly correlated with each other a derlying market for all risky asset impossible, and tests using an inc important statement about the da still incomplete indexes was made

Although these problems are retical than practical. First, if all mately equivalent beta results or r our results. Furthermore, indexes : and thus they at least provide sor

Therefore, the real question i affects results. The data in Exhil practical side of the index questi Jones Industrial Average (DJIA), t Value-Weighted Index in calculat estimates were quite similar; but f see that the choice of an index is practical one as well.

Stocks alone make up the in broader index is still in the exper gave us some idea of the changes

#### *Exhil*

#### **Alphas and Betas of Ran**

	GMI	
	$\alpha$	$\beta$
Cerro	-0.638	1.308
Falstaff Brewing	-1.426	1.028
Graniteville	-0.425	1.051
Scott Foresman	-0.099	1.130
Hall WF	-0.202	0.695
Gulf Oil	-0.236	0.528
Fedders	2.035	1.302
AMP	1.196	0.784
Chrysler	-0.747	1.107
Zayre	2.369	1.471

Source: G. M. Frankfurter, "The Effect of Mark Portfolio Selection Model," *Journal of Finance*, 3

st choose an estimation inter-  
 assumed all investors' horizons  
 we define the horizon of  
 or the horizon investors are  
 they are not buying and/or sell-  
 e are measuring are, in fact,  
 rs do reallocate their portfolios.  
 vestors do not have the same  
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es for the choice of a horizon,  
 ooked elsewhere for direction.  
 e amount of data is needed to  
 ution. Since most of the hy-  
 ption of normalcy, as does the  
 ) and computing constraints  
 size. With the availability of  
 and the need for a reasonably  
 ear, estimation period became  
 many believed that it was *the*  
 ortance of interval in the es-  
 rd may not be the best choice.  
 uate amount of data, without  
 to the current situation,<sup>7</sup> and

ed that the index choice was  
 were highly correlated;<sup>9</sup>  
 changeable.

t choosing an index, our the-  
 ome more sophisticated. We  
 is not fully diversified (is not  
 y assets), the market model  
 rsifiable and nondiversifiable  
 e an informationless or wrong

ns, such as the Fisher effect: because  
 or end-of-the-day price can yield an  
 e estimated beta.  
 eory to Public Utility Rate Cases,"  
 3 (Spring 1972), 58-97.  
 tionship between indexes. If returns  
 elation of 1.0. If they were perfectly

beta, or we could believe that nonsystematic risk was larger or smaller than it actually was. Correlation analysis was used in the past to rationalize index choice. But this method is not enough: two indexes could be highly correlated with each other and still not be correlated with the underlying market for all risky assets. Thus, finding a true proxy may be impossible, and tests using an incorrect index would be useless. A more important statement about the dangers of using widely acceptable but still incomplete indexes was made by Roll (1977).

Although these problems are disturbing, they may be more theoretical than practical. First, if all our available indexes yield approximately equivalent beta results or ranks, we can have some confidence in our results. Furthermore, indexes are what investors use as benchmarks, and thus they at least provide some practical information.

Therefore, the real question is whether the choice of index actually affects results. The data in Exhibit 4-11 provide a perspective on the practical side of the index question. Frankfurter (1976) used the Dow Jones Industrial Average (DJIA), the Standard & Poor 425, and a Scholes Value-Weighted Index in calculating betas. For some stocks, the beta estimates were quite similar; but for other stocks, they were not. We can see that the choice of an index is not only a theoretical problem but a practical one as well.

Stocks alone make up the indexes used by Frankfurter. Building a broader index is still in the experimental stage, although Sharpe (1973) gave us some idea of the changes that might occur as our sophistication

Exhibit 4-11

## Alphas and Betas of Randomly Selected Securities

	GMI		S&P 425		DJIA		Mean Return
	$\alpha$	$\beta$	$\alpha$	$\beta$	$\alpha$	$\beta$	
Cerro	-0.638	1.308	-0.270	1.612	-0.319	1.547	0.358
Falstaff Brewing	-1.426	1.028	-1.083	1.228	-1.132	1.116	-0.644
Graniteville	-0.425	1.051	-0.031	1.133	-0.136	1.169	0.375
Scott Foresman	-0.099	1.130	0.288	1.321	0.269	1.125	0.761
Hall WF	-0.202	0.695	0.002	0.909	-0.075	0.920	0.327
Gulf Oil	-0.236	0.528	-0.163	0.920	-0.201	0.840	0.167
Fedders	2.035	1.302	2.359	1.861	2.284	1.697	3.026
AMP	1.196	0.784	1.403	1.000	1.367	0.975	1.793
Chrysler	-0.747	1.107	-0.513	1.701	-0.628	1.657	0.096
Zayre	2.369	1.471	2.867	1.738	2.768	1.649	3.489

Source: G. M. Frankfurter, "The Effect of Market Indexes on the Ex-Post Performance of the Sharpe Portfolio Selection Model," *Journal of Finance*, 31 (June 1976), 953.

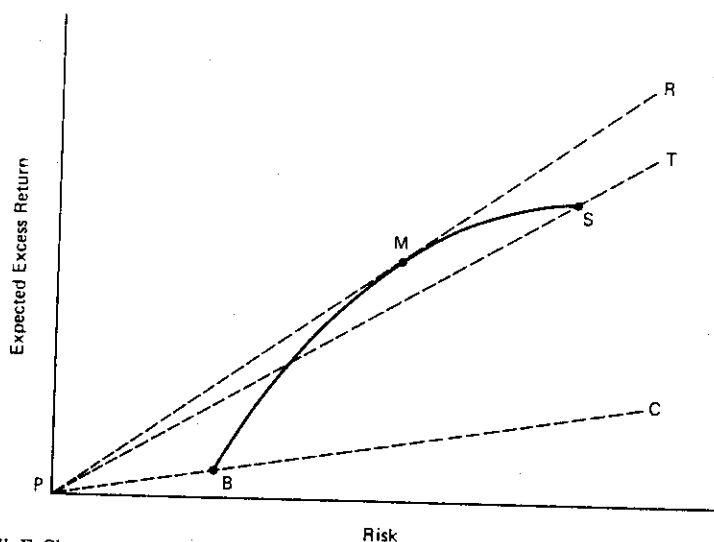
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in creating indexes increases. Exhibit 4-12 shows the hypothetical differences suggested by Sharpe. The *PST* line is the hypothetical capital market line using stocks alone. The *PBC* line could be the line using bonds, and the *PMR* line could be the quite different result of using a combined stock-bond index. Sharpe suggests the combined indexes would result in a higher line.

While we have reasonable proxies for the stock market, we do not have the same for bonds (or for other assets), although money management organizations are developing more extensive indexes.<sup>10</sup> What is obvious is that there are clear differences among the markets, and, as the 1970s and 1980s have shown, each market changes over time.<sup>11</sup> Still data from the stock market, although limited in the assets they contain, are an available and widely used accommodation.

Exhibit 4-12

### Opportunity Sets Using Different Indexes



Source: W. F. Sharpe, "Bonds vs. Stocks: Some Lessons from Capital Market Theory," *Financial Analysts Journal*, 29 (November-December 1973), 75.

<sup>10</sup>See, for instance, First Chicago Bank's First Chicago Investment Advisors' Multiple Markets Index, which includes large and small capitalization, and international equities, venture capital, domestic and international dollar and nondollar bonds, real estate, and cash equivalents.

<sup>11</sup>The relative volatility of the bond markets since the mid-1970s has been markedly higher than the volatility previously experienced.

### Estimating Beta

#### The market model form

There is little in the academic literature that suggests that different forms of the market model change, all else staying the same.

There are a variety of versions of the market model:

$$R_j = \alpha_j$$

We have the risk-premium version of the market model for  $R_j$  bills to AA utility bonds for  $R_f$ .

$$R_j - R_f = \alpha_j$$

There is a less compact form of

$$R_j = \alpha_j + \beta_j$$

If all of these market model forms are the same and the intercept term  $\alpha_j$  of the simple model would be equal to the risk-premium model.<sup>12</sup>

Exhibit 4-13 shows the results

Exhibit

#### The Results of Three Models for a Public Utility

	$\alpha$
Simple model	-0.0027
Risk-premium model†	-0.0041
Multifactor‡	-0.0043

\*Coefficient for  $R_j$  in the multifactor model

†Coefficient for market volatility factor

‡ $R_j$  proxy is the return on Treasury

Source: D. Harrington, "The Capital Asset Pricing Model," 164.

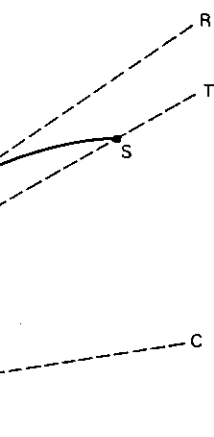
<sup>12</sup>These models exist in both compact and noncompact form. cause market returns are normally reported in geometric form.

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2 shows the hypothetical dif-  
ne is the hypothetical capital  
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ts), although money manage-  
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mong the markets, and, as the  
changes over time.<sup>11</sup> Still data  
n the assets they contain, are  
on.

### Different Indexes



m Capital Market Theory," *Financial An-*

Chicago Investment Advisors' Mul-  
capitalization, and international eq-  
lar and nondollar bonds, real estate,

nce the mid-1970s has been markedly

### The market model form

There is little in the academic literature about the impact that different forms of the market model have on beta. If the form of the market model changes, all else staying the same, will the beta change? It should not.

There are a variety of versions of the market model. We have a simple market model:

$$R_j = \alpha_j + \beta_j R_m + \epsilon_j$$

We have the risk-premium version, where we could use anything from T-bills to AA utility bonds for  $R_f$ .

$$R_j - R_f = \alpha_j + \beta_j(R_m - R_f) + \epsilon_j$$

There is a less compact form of the risk-premium version:

$$R_j = \alpha_j + \beta_{j1}(R_f) + \beta_{j2}R_m + \epsilon_j$$

If all of these market model forms are equivalent, the betas should be the same and the intercept terms should be equal. This means that the  $\alpha_j$  of the simple model would be equal to the term  $\alpha_{j1} + R_f$  of the risk-premium model and equal to the term  $\alpha_j + \beta_{j1}(R_f)$  of the less compact risk-premium model.<sup>12</sup>

Exhibit 4-13 shows the results of using the different models in cal-

### Exhibit 4-13

**The Results of Three Versions of the Market Model  
for a Public Utility (Monthly Data)**

	$\alpha$	$\beta_1^*$	$\beta_2^\dagger$	$R^2$
Simple model	-0.0027		0.544	.467
Risk-premium model‡	-0.0041		0.615	.378
Multifactor‡	-0.0043	0.17	0.612	.497

\*Coefficient for  $R_f$  in the multifactor model.

†Coefficient for market volatility factor.

‡ $R_f$  proxy is the return on Treasury bills.

Source: D. Harrington, "The Capital Asset Pricing Model and Regulated Utility Cost of Equity" (Ph.D. dissertation, 1978), 164.

<sup>12</sup>These models exist in both compound (geometric) form and arithmetic form. Because market returns are normally reported as compound rates of return, many prefer the geometric form.

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culating betas for one utility. And neither the betas nor the intercepts are equal from model to model. These forms are all variations of the basic CAPM. None have been modified to deal directly with the problems of misspecification.

We have considered the results of changing some of the simple parameters that are necessary for estimating a beta using historical data. The choice of each input changes the output, and the size of the difference is enough to cause concern. How should betas be measured, using history? The disconcerting answer is that we do not know. Finding the best way to measure beta is not merely a theoretical problem; it is a practical one. The search still requires trial-and-error experimentation.

## II. TESTING THE STABILITY OF HISTORICAL BETAS

Now that we have outlined some of the problems involved in measuring historical betas, let us return to the more fundamental issue of the usefulness of history in predicting the future. If historical betas are reasonable predictors of future betas, then we should definitely spend the time required to refine our statistical tools. If historical betas are not reasonable predictors, then we must look for a better way to make beta forecasts. Because the use of historical data to predict the future assumes that betas are stable over time, most tests of the usefulness of historical betas have focused on the issue of the stability of historical betas. If historical betas remain relatively unchanged over time, then historical betas may be useful surrogates for forecasted (ex ante) betas. If, however, historical betas vary over time, then they will have little predictive ability.

What are the results of tests of the stability of historical betas?

### 1. ANALYSIS OF INDIVIDUAL SECURITIES' BETAS

Bey (1983) used a sophisticated statistical approach to look at the stability of the betas of public utility and industrial stocks. Exhibit 4-14 shows some of his results for individual (not portfolios) utility stocks. For different industries, Exhibit 4-15 shows mean betas and the proportion that were stationary. Note that the ordinary-least-squares (OLS) betas change quite dramatically from period to period—they were not stable.

The average beta is an imprecise estimate. Blume (1971) reported that although the market's average beta was 1.0 (as we would expect), the average standard error (0.30) resulted in a 95 percent confidence in-

### Beta and Mar

UTILITY NAME	1/60-12/60
Consolidated Edison Co.	
N.Y. Inc.	0.59*
Consolidated Natural Gas Co.	0.59
Consumers Power Co.	0.69
Dayton Power & Light Co.	0.76
Delmarva Power & Light Co.	0.85
Detroit Edison Co.	0.64
Duquesne Light Co.	0.52
El Paso Co.	0.69
Empire District Electric Co.	0.67
Enserch Corp.	0.47

\*Nonstationary beta for  $\alpha = 0.05$

Source: Roger P. Bey, "Market Model Stationary and Quantitative Analysis, 18 (March 1983)."

terval from 0.4 to 1.6. (That is average historical beta was between 0.4 and 1.6. That is a beta estimate made with confidence. That is, over time, beta of 1.0. We are not now sure whether changes in the riskiness of the phenomenon is clear. Exhibit 4-14 documents. From the first to one exception—becomes closer

As a result of this finding, producers began to adjust their forecasts. H. Blume (1979) believed that this beta demonstrated that betas drift since they are calculated moving for 4-17 shows their results. From their OLS and their Bayesian-adjusted betas, it appears to be a statistical help analysts to determine the to adjust forecasts.

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## Exhibit 4-14

## Beta and Market Model Stationarity

UTILITY NAME	ESTIMATED OLS BETAS			
	1/60-12/64	1/65-12/69	1/70-12/74	1/75-12/79
Consolidated Edison Co. N.Y. Inc.	0.59*	0.46*	0.55*	1.12*
Consolidated Natural Gas Co.	0.59	0.61	0.39*	0.89
Consumers Power Co.	0.69	0.67	0.59*	1.04*
Dayton Power & Light Co.	0.76	0.99	0.39	0.78*
Delmarva Power & Light Co.	0.85	0.82	0.72*	0.76*
Detroit Edison Co.	0.64	0.50	0.55*	0.98*
Duquesne Light Co.	0.52	0.27	0.46	0.84*
El Paso Co.	0.69	0.54*	0.84*	1.00
Empire District Electric Co.	0.67	0.58	0.25*	0.57
Enserch Corp.	0.47	0.94*	1.02*	0.62

\*Nonstationary beta for  $\alpha = 0.05$ .

Source: Roger P. Bey, "Market Model Stationarity of Individual Public Utilities," *Journal of Finance and Quantitative Analysis*, 18 (March 1983), 74.

interval from 0.4 to 1.6. (That is, one can be 95 percent sure that the average historical beta was between 0.4 and 1.6.) This could not be called a beta estimate made with confidence. Blume must also be credited for his finding that, over time, betas tend to drift toward the market average of 1.0. We are not now sure whether this movement is caused by true changes in the riskiness of the securities or by statistical problems, but the phenomenon is clear. Exhibit 4-16 shows the problem that Blume documented. From the first to the second period, each beta—with only one exception—becomes closer to 1.0.

As a result of this finding, called beta drift, several commercial beta producers began to adjust their forecasted betas toward 1.0 in an effort to improve their forecasts. However, Elgers, Haltiner, and Hawthorne (1979) believed that this beta drift was a statistical aberration and demonstrated that betas drift similarly toward 1.0, regardless of whether they are calculated moving forward or backward through time. Exhibit 4-17 shows their results. From periods 1 to 2 and from periods 2 to 1 their OLS and their Bayesian-adjusted betas drift toward 1.0. Thus, the drift appears to be a statistical aberration. It cannot be relied upon to help analysts to determine the stability of calculated historical betas or to adjust forecasts.

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## Exhibit 4-15

Mean  $\beta$  and Percentage of Securities with Market Model Nonstationarity

SIC CODE	NO. OF SECURI- TIES	MEAN BETA ESTIMATE				PERCENTAGE OF SECURITIES NONSTATIONARY*					
		1/60- 12/64	1/65- 12/69	1/70- 12/74	1/75- 12/79	1/60- 12/64	1/65- 12/69	1/70- 12/74	1/75- 12/79	1/70- 12/74	1/75- 12/79
10	11	0.57	0.78	0.86	0.97	18	18	36	36		
20	32	0.94	1.04	0.93	1.00	34	13	28	47		
22	10	0.96	1.41	1.06	1.37	50	0	20	70		
26	14	1.10	1.15	1.03	1.19	29	21	36	57		
28	42	1.22	1.17	1.07	1.06	29	19	36	38		
29	18	0.82	0.89	0.99	0.80	44	44	22	39		
30	12	1.16	1.26	1.08	1.20	50	33	58	58		
32	16	1.08	1.47	1.07	1.34	38	44	25	56		
33	27	1.17	1.27	1.05	1.21	30	22	19	44		
34	14	1.03	1.24	0.97	1.29	36	43	14	43		
35	41	1.17	1.28	1.16	1.32	24	22	41	34		
36	29	1.36	1.30	1.24	1.35	38	10	48	48		
37	34	1.04	1.45	1.11	1.52	24	24	38	41		
38	10	1.34	1.38	1.33	1.42	40	20	10	50		
40	10	1.16	1.07	1.09	1.03	40	20	30	30		
45	10	1.61	1.72	1.80	1.62	40	30	10	50		
49	89	0.71	0.63	0.65	0.78	21	17	41	62		
53	13	0.86	1.09	1.14	1.21	23	8	31	69		
67	21	0.93	1.18	0.99	1.09	24	33	38	57		
Total	453					30	22	34	49		

\* $\alpha = 0.05$ .Source: Roger P. Bey, "Market Model Stationarity of Individual Public Utilities," *Journal of Finance and Quantitative Analysis*, 18 (March 1983), 76.

## Exhibit 4-16

Estimated Beta Coefficients for Portfolios of 100 Securities  
in Two Successive Periods



36	29	1.37	1.30	1.24	1.35	38	41
37	34	1.04	1.45	1.11	1.52	24	38
38	10	1.34	1.38	1.33	1.42	40	50
40	10	1.16	1.07	1.09	1.03	20	30
45	10	1.61	1.72	1.80	1.62	40	50
49	89	0.71	0.63	0.65	0.78	21	62
53	13	0.86	1.09	1.14	1.21	23	69
67	21	0.93	1.18	0.99	1.09	24	38
Total		453		30	22	34	49

\* $\alpha = 0.05$ .

Source: Roger P. Bey, "Market Model Stationarity of Individual Public Utilities," *Journal of Finance and Quantitative Analysis*, 18 (March 1983), 76.

# Exhibit 4-16 Estimated Beta Coefficients for Portfolios of 100 Securities in Two Successive Periods

PORT- FOLIO	7/26- 6/33		7/33- 6/40		7/40- 6/47		7/40- 6/47		7/47- 6/54		7/47- 6/54		7/54- 6/61		7/54- 6/61		7/61- 6/68	
	7/26- 6/33	7/33- 6/40	7/33- 6/40	7/40- 6/47	7/40- 6/47	7/47- 6/54	7/47- 6/54	7/54- 6/61	7/54- 6/61	7/61- 6/68	7/61- 6/68	7/68- 6/75	7/68- 6/75	7/75- 6/82	7/75- 6/82	7/82- 6/89	7/82- 6/89	
1	0.528	0.610	0.394	0.573	0.442	0.593	0.385	0.553	0.393	0.620	0.393	0.620	0.393	0.620	0.393	0.620	0.393	
2	0.898	1.004	0.708	0.784	0.615	0.776	0.654	0.748	0.612	0.707	0.612	0.707	0.612	0.707	0.612	0.707	0.612	
3	1.225	1.296	0.925	0.902	0.746	0.887	0.832	0.971	0.810	0.861	0.810	0.861	0.810	0.861	0.810	0.861	0.810	
4			1.177	1.145	0.876	1.008	0.967	1.010	0.987	0.914	0.987	0.914	0.987	0.914	0.987	0.914	0.987	
5			1.403	1.354	1.037	1.124	1.093	1.095	1.138	0.995	1.138	0.995	1.138	0.995	1.138	0.995	1.138	
6					1.282	1.251	1.245	1.243	1.337	1.169	1.337	1.169	1.337	1.169	1.337	1.169	1.337	

Source: M. Blume, "On the Assessment of Risk," *Journal of Finance*, 26 (March 1971), 7.

Exhibit 4-17

Portfolio Betas in Successive Time Periods

PORT-FOLIO NUM-BER	PERIOD 1 (7/54-6/61)		PERIOD 2 (7/61-6/68)		PERIOD 3 (7/61-6/68)		PERIOD 4 (7/54-6/61)	
	OLS	Adjusted	OLS	Adjusted	OLS	Adjusted	OLS	Adjusted
1	0.381	0.522	0.592		0.393	0.515		0.558
2	0.581	0.676	0.634		0.566	0.653		0.709
3	0.774	0.825	0.780		0.727	0.782		0.825
4	0.950	0.962	0.872		0.855	0.884		0.921
5	1.093	1.072	0.940		0.974	0.980		1.149
6	1.252	1.194	1.061		1.139	1.111		1.177
7	1.621	1.480	1.286		1.510	1.408		1.315

Source: P. T. Elgers, J. R. Halkiner, and W. H. Hawthorne, "Beta Regression Tendencies: Statistical and Real Causes," *Journal of Finance*, 34 (March 1979), 262.

Estimating Beta

In another early study of bet that if the amount of variance ex period to the next, then betas w to another. Exhibit 4-18 shows s beta, as we would expect, was qu occurred in both periods, showin each other. For many individual returns' behavior explained by t from period to period. For instanc call instability.

In reviewing such results, o ers's contention, let us graphical Oil Company stock, which is one the left in Exhibit 4-19 are grap percent of the changes in return in market returns. The remainde came from unsystematic sources firm or industry. Perhaps Shell h

Ex

Percentage of Variance ( $R^2$ ) Ex  
(Market Factor) fr

COMPANY NAME

Allegheny Power System  
Allied Chemical  
American Motors  
American Tobacco Co.  
Atchison, Topeka and Santa Fe  
Chesapeake and Ohio  
Coca-Cola  
Consolidated Edison of NY  
Detroit Edison  
General Electric  
IBM  
ITT  
Maytag  
Pacific Gas and Electric  
Shell Oil  
Southern California Edison  
Average of 94 companies

Source: Adapted from S. C. Meyers, "The Security Price Behavior," *Accounting Review*

In another early study of beta stability, Meyers (1973) hypothesized that if the amount of variance explained by the market varied from one period to the next, then betas would not be stationary from one period to another. Exhibit 4-18 shows some of Meyers's results. The portfolio beta, as we would expect, was quite stable. Virtually the same variance occurred in both periods, showing that beta estimation errors canceled each other. For many individual securities, however, the amount of the returns' behavior explained by the market (the  $R^2$ ) was quite different from period to period. For instance, Coca-Cola showed what Meyers would call instability.

In reviewing such results, one must use logic. To demonstrate Meyers's contention, let us graphically represent the variances for the Shell Oil Company stock, which is one of the stocks listed in Exhibit 4-18. To the left in Exhibit 4-19 are graphed the results for the first period: 34.6 percent of the changes in returns from this stock reflected the changes in market returns. The remainder of the changes in the stock's returns came from unsystematic sources—from factors specifically related to the firm or industry. Perhaps Shell had unexpected good fortune in securing

Exhibit 4-18

**Percentage of Variance ( $R^2$ ) Explained by First Principal Component  
(Market Factor) from Stock Price Relatives**

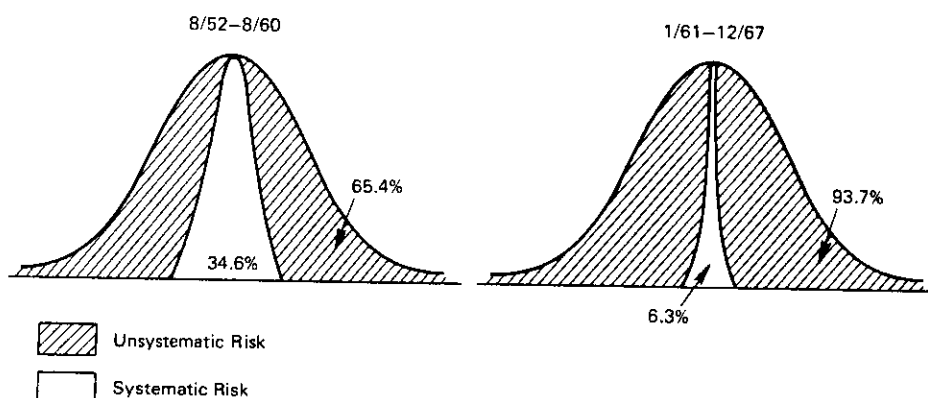
COMPANY NAME	AUGUST 1952- AUGUST 1960	JANUARY 1961- DECEMBER 1967
Allegheny Power System	46.2	14.1
Allied Chemical	43.8	44.9
American Motors	5.2	15.3
American Tobacco Co.	11.0	40.7
Atchison, Topeka and Santa Fe	60.0	40.4
Chesapeake and Ohio	50.0	53.3
Coca-Cola	11.1	29.2
Consolidated Edison of NY	11.1	8.5
Detroit Edison	14.3	15.4
General Electric	34.3	27.6
IBM	25.8	45.9
ITT	37.8	46.2
Maytag	25.0	26.0
Pacific Gas and Electric	30.0	26.4
Shell Oil	34.6	6.3
Southern California Edison	17.9	22.9
Average of 94 companies	33.4	33.5

Source: Adapted from S. C. Meyers, "The Stationarity Problem in the Use of the Market Model of Security Price Behavior," *Accounting Review*, 48 (April 1973), 320.

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Exhibit 4-19

### Percentage of Total Risk from Systematic and Unsystematic Sources for Shell Oil Company



a new source of oil or reducing delivery costs. In the second period (graphed to the right), 6.3 percent of the changes were related to systematic factors. Does this result mean that the beta changed? There is no way to tell from these data. We can say that the returns from one company's stock were more influenced by marketwide forces in one period than in another, but we can say nothing about the beta.

Meyer's results showed that the portfolio beta was relatively stable. Blume (1971, 1975) and Porter and Ezzell (1975) also looked at the stability of portfolios. Using two different methods for forming portfolios, they had what appeared to be conflicting results: increasing the size of the portfolio may or may not increase the stability of beta. After correcting for the different ways in which Blume and Porter and Ezzell created their portfolios, Alexander and Chervany (1980) found that their results were not in conflict—beta was more stable in more diversified portfolios. In addition, they found that most of the improvement in beta stability occurred by the point where there were ten securities in the portfolio. Added securities lent small improvements.

Thus, it appears that portfolio betas are relatively stable, and, by inference, easier to predict than the betas for individual stocks.

## 2. ANALYZING RISK CLASSES

Another way of assessing beta stability is to look at beta rankings. The hypothesis is that if the firm stays in the same beta class from period

to period, betas could be said to be stable. Blume (1971) used two methods to test for stability. Looking at the results of his test for the period 1968. Portfolios with only one security were in the same risk class 93.7 percent of the time. This means that betas for individual securities were more apt to remain in the same risk class. This is a stronger result than found for portfolios. Securities that had very accurate risk rankings did not change rank between the two periods. Blume found virtually no shares that were in a different risk class than that of the market (there were a few).

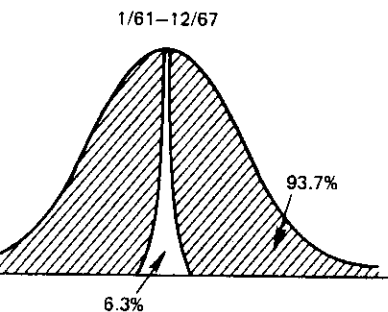
Baesel (1974), using another method, further tested the stability of risk classes. He divided securities into five risk classes and then tested whether the securities remained in the same class. His transition matrix, which shows the frequency with which securities moved from one period to the next, shows his transition matrix, indicating the frequency with which securities remained in class 1 for the next period. For instance, 12 percent of those in class 1 in the first period remained in class 1 in the first period. Baesel himself is not enough to say that betas for securities are stable. Admittedly, Baesel's group found that betas for securities are stable. Because classes 1 and 5 include the extreme groups, the range is broad. The results for the middle classes is more reliable. Confirming previous findings, they found, in a closer examination of extreme groups, that "larger changes in beta are captured or explained more of the history of the security than in the interior portfolios."

In both Blume's and Baesel's studies, portfolios were more stable than individual stocks. Others have confirmed these results.

<sup>13</sup>Gordon J. Alexander, and N. I. "Beta," *Journal of Financial and Quantitative Analysis*, 10 (1975), 1123-1133.

<sup>14</sup>R. C. Klemkosky and J. D. May, "Beta Levels in Testing Various-Sized Portfolios," *Journal of Finance*, 30 (September 1975), 1123-1133. They found that beta levels increased as the portfolio size increased. They also found that the results captured or explained more of the history of the security than in the interior portfolios. (October 1975), 365-71, also studied the

#### d Unsystematic Sources



costs. In the second period changes were related to systematic factors. The beta changed? There is no evidence that the returns from one company are different from the marketwide forces in one period about the beta.

Portfolio beta was relatively stable. Blume (1975) also looked at the stability of beta for forming portfolios. He found that: increasing the size of the portfolio increases the stability of beta. After confirming this, Porter and Ezzell (1975) found that their results were stable in more diversified portfolios. The improvement in beta stability was more pronounced as the number of securities in the portfolio increased.

Betas are relatively stable, and, by extension, are stable for individual stocks.

To look at beta rankings. The same beta class from period

to period, betas could be said to be relatively stable and thus reasonable predictors. Blume (1971) used two similar methods of ranking the betas to test for stability. Looking at the last column in Exhibit 4-20, we can see the results of his test for the period 1954-61 versus the period 1961-68. Portfolios with only one security remained in the same risk class 62 percent of the time. This means that 38 percent of the stocks changed risk class. This is a stronger result than those obtained from studies that found betas for individual securities were unstable. Larger portfolios were more apt to remain in the same risk class and portfolios with 50 securities had very accurate risk rankings; only 3 percent of these portfolios changed rank between the two periods. Of further interest is the fact that Blume found virtually no shares that moved in a direction opposite to that of the market (there were almost no negative correlations).

Baesel (1974), using another technique called a *transition matrix*, further tested the stability of risk classes. Baesel classified securities into five risk classes and then tested them in the next period to see whether the securities remained in the same risk class. Exhibit 4-21 shows his transition matrix, indicating the stability of securities' risk classes from one period to the next. Each number in the table represents the frequency with which securities fell into a single risk group in both periods. For instance, 12 percent of the securities in class 1, period  $t$ , remained in class 1 for the next period ( $t + 1$ ). Conversely, 88 percent of those in class 1 in the first period changed to a different class in the following period. Baesel himself characterized his results as strong enough to say that betas for single securities were not random, but that is all. Admittedly, Baesel's grouping technique does have some problems. Because classes 1 and 5 include all those falling outside the three central classes, the range is broad. The information regarding the three central classes is more reliable. Confirming this suspicion, Alexander and Chervany found, in a closer examination of the behavior of the betas in the extreme groups, that "larger changes in the beta occurred in the extreme pentiles than in the interior pentiles for all but one case."<sup>13</sup>

In both Blume's and Baesel's tests, betas for randomly generated portfolios were more stable than were betas for individual securities. Others have confirmed these results.<sup>14</sup>

<sup>13</sup>Gordon J. Alexander, and N. L. Chervany, "On the Estimation and Stability of Beta," *Journal of Financial and Quantitative Analysis*, 15 (March 1980), 125.

<sup>14</sup>R. C. Klemkosky and J. D. Martin, "The Adjustment of Beta Forecasts," *Journal of Finance*, 30 (September 1975), 1123-28, used standard errors for the betas rather than beta levels in testing various-sized portfolios. They showed that the standard errors decreased as the portfolio size increased. This result indicates that betas for larger portfolios captured or explained more of the historical variation. R. Burr Porter and J. R. Ezzell, in "A Note on the Predictive Ability of Beta Coefficients," *Journal of Business Research*, 3 (October 1975), 365-71, also studied the question.

## Exhibit 4-20

Product Moment and Rank-Order Correlation of Betas for Portfolios of N Securities

NUMBER OF SECURITIES PER PORT- FOLIO	7/26-6/33 and 7/33-6/40		7/33-6/40 and 7/40-6/47		7/40-6/47 and 7/47-6/54		7/47-6/54 and 7/54-6/61		7/54-6/61 and 7/61-6/68	
	P.M.	Rank	P.M.	Rank	P.M.	Rank	P.M.	Rank	P.M.	Rank
1	0.63	0.69	0.62	0.73	0.59	0.65	0.65	0.67	0.60	0.62
2	0.71	0.75	0.76	0.83	0.72	0.79	0.76	0.76	0.73	0.74
4	0.80	0.84	0.85	0.90	0.81	0.89	0.84	0.84	0.84	0.85
7	0.86	0.90	0.91	0.93	0.88	0.93	0.87	0.88	0.88	0.89
10	0.89	0.93	0.94	0.95	0.90	0.95	0.92	0.93	0.92	0.93
20	0.93	0.99	0.97	0.98	0.95	0.98	0.95	0.96	0.97	0.98
35	0.96	1.00	0.98	0.99	0.95	0.99	0.97	0.98	0.97	0.97
50	0.98	1.00	0.99	0.98	0.98	0.99	0.98	0.98	0.98	0.97

Source: M. Blume, "On the Assessment of Risk," *Journal of Finance*, 26 (March 1971), 7.

## Estimating Beta

Exh

## Twelve-Month Estimatic

RISK CLASS PERIOD <i>t</i>	R	
	1	2
1	.12	.1
2	.15	.2
3	.18	.1
4	.22	.2
5	.33	.2

Source: J. Baesel, "On the Assessment of Risk (December 1974), 1492.

## 3. ANALYZING STANDARD ERRORS

Klemkosky and Martin (1975) ex to decrease as the number of secu increased. They broke the mean: inefficiency, and randomness. Bu mates or underestimates the acti prediction has positive errors for betas. *Random* errors are the un

In Exhibit 4-22 we see that random portfolios for July 1962- showed little bias but significant tended to be correlated with the l forecast the actual result, where underforecasts. Random errors d because random errors could off

Klemkosky and Martin tes that practitioners were using to r to inefficiency. Exhibit 4-23 sho ment, tested by Klemkosky and for the security with the average firm issuing the security in ques

<sup>16</sup>This same mean-squared error t the length of the estimation period on t found that the longer the period and the error. The improvement was largely due and J. K. Zumwalt, "Impact of Alternati Stability of Security and Portfolio Bet 1981), 321-25.

## Exhibit 4-21

## Twelve-Month Estimation Interval Transition Matrix

RISK CLASS PERIOD $t$	RISK CLASS PERIOD $t + 1$				
	1	2	3	4	5
1	.12	.16	.17	.21	.34
2	.15	.21	.22	.21	.23
3	.18	.18	.23	.21	.13
4	.22	.23	.19	.21	.12
5	.33	.22	.19	.14	.12

Source: J. Baesel, "On the Assessment of Risk: Some Further Considerations," *Journal of Finance*, 29 (December 1974), 1492.

## 3. ANALYZING STANDARD ERRORS

Klemkosky and Martin (1975) examined what caused the size of errors to decrease as the number of securities in randomly generated portfolios increased. They broke the mean-squared error into three portions: bias, inefficiency, and randomness. *Bias* indicates that a prediction overestimates or underestimates the actual result. *Inefficiency* indicates that a prediction has positive errors for low betas and negative errors for high betas. *Random* errors are the unexplainable errors.

In Exhibit 4-22 we see that the betas of Klemkosky and Martin's random portfolios for July 1962-June 1967 versus July 1967-June 1972 showed little bias but significant inefficiency. Most prediction errors tended to be correlated with the beta: for low-beta stocks, the betas overforecast the actual result, whereas for high-beta stocks, the betas were underforecasts. Random errors decreased as the portfolio size increased, because random errors could offset one another in larger portfolios.<sup>15</sup>

Klemkosky and Martin tested a variety of adjustment techniques that practitioners were using to reduce the portion of the error ascribable to inefficiency. Exhibit 4-23 shows their results. The Bayesian adjustment, tested by Klemkosky and Martin, combined the beta estimated for the security with the average beta for a group of firms similar to the firm issuing the security in question. For instance, if we were predicting

<sup>15</sup>This same mean-squared error technique has been used to measure the effect of the length of the estimation period on the quality of the forecast. Eubank and Zumwalt found that the longer the period and the larger the portfolio, the smaller the mean-squared error. The improvement was largely due to increased efficiency. See Arthur A. Eubank, Jr., and J. K. Zumwalt, "Impact of Alternative Length Estimation and Prediction Periods on the Stability of Security and Portfolio Betas," *Journal of Business Research*, 9 (September 1981), 321-25.

Source: M. Blume, "On the Assessment of Risk," *Journal of Finance*, 26 (March 1971), 7.

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Exhibit 4-22

**Source of the Mean-Squared Errors in Beta Predictions,  
July 1962-June 1967 vs. July 1967-June 1972**

	PORTFOLIO SIZE (NUMBER OF SECURITIES)				
	1	3	5	7	10
MSE	.16122	.08363	.06880	.05982	.05465
Portions of MSE due to:					
Bias	.00093	.00100	.00093	.00097	.00119
Inefficiency	.03992	.03947	.03993	.03975	.03800
Random errors	.12036	.04314	.02792	.01908	.01545

Source: Adapted from R. C. Klemkosky and J. D. Martin, "The Adjustment of Beta Forecasts," *Journal of Finance*, 30 (September 1975), 1125.

an electric utility's beta, our choice might be the average beta for all utilities or that for Moody's 24 Electrics. The Blume adjustment combines the current beta estimate with the prior-period betas. The "MLPFS" is the Merrill Lynch technique of weighting the calculated beta with the market beta of one.

As we can see, Blume's technique reduces inefficiency, and the Bayesian adjustment reduces bias. On the whole, however, the total error is largely caused by random errors, and little besides increasing the portfolio size can be done about that. The law of large numbers is of slight comfort to those evaluating individual securities.

An active portfolio manager might like to know how many securities it takes to control ex ante portfolio betas, to, say,  $\pm 2$  percent of their weighted average. The surprising answer is that it takes more securities to control beta mismeasurement than to control unsystematic risk in terms of their impact on portfolios. The number is about 800—a number large enough to seriously dilute any benefits from active management.

Randomly composed portfolios reduce beta instability. Is this statement also true for structured portfolios? Beta reliability and stability, of course, improve, but not as much as they improve by randomly composed portfolios. The practical problems of beta instability, in short, remain serious for the practicing manager with active management objectives for his or her portfolio.

Beta is unstable, as much of the evidence clearly shows. In fact, a number of researchers, using quite different methods for estimating beta, have found that much of the regression error (the residual risk), and the relationship between the residual risk and beta, may come from mismeasuring a nonstationary beta.

Exhibit 4-23

**Forecast Errors of Adjusted Versus Unadjusted Beta Coefficients**

	INDIVIDUAL SECURITIES				PORTFOLIOS (SIZE TEN)			
	Unadjusted	Bayesian	Blume's	MLPFS	Unadjusted	Bayesian	Blume's	MLPFS
Period 2								
Mean Square Error (MSE)	.18387	.13111	.11123	.11015	.08544	.03460	.01259	.01153
Portion of MSE due to:								
Bias	.00084	.00004	.00183	.00075	.00095	.00006	.00178	.00072
Inefficiency	.07367	.02372	.00004	.00004	.07370	.02355	.00002	.00002
							.01079	.01079



# in Beta Predictions, 1967-June 1972

## SIZE (NUMBER OF SECURITIES)

5	7	10
.06880	.05982	.05465
.00093	.00097	.00119
.03993	.03975	.03800
.02792	.01908	.01545

n, "The Adjustment of Beta Forecasts," *Jour-*

ght be the average beta for all  
s. The Blume adjustment com-  
the prior-period betas. The  
ue of weighting the calculated

reduces inefficiency, and the  
e whole, however, the total error  
ttle besides increasing the port-  
w of large numbers is of slight  
curities.

like to know how many securi-  
tas, to, say,  $\pm 2$  percent of their  
at it takes more securities  
control unsystematic risk in  
number is about 800—a number  
fits from active management.  
ce beta instability. Is this state-  
Beta reliability and stability, of  
ey improve by randomly com-  
of beta instability, in short, re-  
with active management objec-

vidence clearly shows. In fact, a  
nt methods for estimating beta,  
error (the residual risk), and the  
d beta, may come from mises-

## Exhibit 4-23

### Forecast Errors of Adjusted Versus Unadjusted Beta Coefficients

	INDIVIDUAL SECURITIES				PORTFOLIOS (SIZE TEN)			
	Unadjusted	Bayesian	Blume's	MLPFS	Unadjusted	Bayesian	Blume's	MLPFS
<i>Period 2</i>								
Mean Square Error (MSE)	.18387	.13111	.11123	.11015	.08544	.03460	.01259	.01153
Portion of MSE due to:								
Bias	.00084	.00004	.00183	.00075	.00095	.00006	.00178	.00072
Inefficiency	.07367	.02372	.00004	.00004	.07370	.02355	.00002	.00002
Random error	.10935	.10735	.10936	.10936	.01078	.01100	.01078	.01078
<i>Period 3</i>								
Mean Square Error (MSE)	.12385	.11609	.12207	.12293	.02332	.01356	.02155	.02238
Portion of MSE due to:								
Bias	.00018	.00011	.00000	.00087	.00018	.00011	.00000	.00083
Inefficiency	.00730	.00043	.00571	.00571	.00725	.00047	.00567	.00567
Random error	.11636	.11555	.11636	.11636	.01587	.01298	.01587	.01587
<i>Period 4</i>								
Mean Square Error (MSE)	.16122	.13082	.14660	.14934	.05465	.02018	.04215	.04485
Portion of MSE due to:								
Bias	.00093	.00000	.00263	.00537	.00119	.00000	.00252	.00522
Inefficiency	.03992	.00981	.02361	.02361	.03800	.00980	.02418	.02418
Random error	.12036	.12101	.12036	.12036	.01545	.01037	.01545	.01546

Source: R. C. Klemkosky and J. D. Martin, "The Adjustment of Beta Forecasts," *Journal of Finance*, 30 (September 1975), 1127.

Typically we have estimated beta from history, using a fixed-coefficient model like ordinary-least-squares regression. These models estimate one beta over time. Using a time-varying model, one where the beta is allowed to vary over time, Chen (1981) found that "the use of the OLS method (or fixed-coefficient model) will overestimate the portfolio residual risk if individual security beta coefficients are changing over time."<sup>16</sup> Once Chen removed the beta variability from the residual risk, the residual risks were stationary and the relationship between residual risk and beta was eliminated.<sup>17</sup>

The time-varying models do appear to eliminate some of the problems that unstable betas create. As for creating a beta coefficient that can be used to estimate future returns, however, these models have their limitations.

Kryzanowski and To (1984) believe that much of the cause of beta instability is not real instability at all. They suggest that estimates of betas using time-series analysis of historic data rely on the past returns, whereas beta is a function of the expected return. Thus, they say that "betas estimated using ex-post return data can be expected to exhibit intertemporal non-stationarity, even when the underlying ex-ante security returns are serially independent and obey a stationary distribution over time."<sup>18</sup>

#### 4. STABILITY OF CORRELATION COEFFICIENTS

A correlation coefficient ( $R$ ) is an ingredient needed to estimate a beta. If the correlation coefficient is unpredictable, then researchers believe that it would be difficult to say that the beta is stable or predictable. Elton, Gruber, and Urich (1978) looked at six methods of estimating the correlation coefficients. They did not break their results down into error components, as Klemkosky and Martin did, but they did test some interesting methods of predicting correlations. The methods tested, which were different from those in the Klemkosky-Martin study, were the following:

1. The overall mean, a simple average correlation coefficient for the stocks included in the test

<sup>16</sup>Son-Nan Chen, "Beta Nonstationarity, Portfolio Residual Risk and Diversification," *Journal of Financial and Quantitative Analysis*, 16 (March 1981), 95-112.

<sup>17</sup>For a study using another technique to adjust betas and reduce residual error, see Lawrence Fisher and Jules Kamin, "Forecasting Systematic Risk: Estimates of 'Raw' Beta That Take Account of the Tendency of Beta to Change and the Heteroskedasticity of Residual Returns," *Journal of Financial and Quantitative Analysis*, 20 (June 1985), 127-50.

<sup>18</sup>Lawrence Kryzanowski and Minh Chau To, "The Telescopic Effect of Past Return Realizations on Ex-Post Beta Estimates," *Financial Review*, 19 (March 1984), 1.

2. A perfect correlation of
3. The Vasicek method, similarly
4. The full historical method, years of data for the par

Their results, shown in Exhibit 14, indicate that the overall mean correlations—better than the mean—is a very cynical method of that the best forecast is just an average. Efforts to refine the estimate for

In a more recent study of a services, Harrington (1981) found a measure of forecast skill. Although some did perform better than others, results for a sample of utility stocks are those for a forecast horizon of periods and samples were tested. Errors is similar. The study also CAPM framework to forecast returns is difficult to forecast.

Thus, we find that betas are fairly stable, nor do most securities change one period to another. Analysis though some components of error standard error can be lessened on portfolio. Finally, we find that the b

Exi

#### Average Absolute Error\* for

FIRST FIVE YEARS		SECON
1. Overall Mean	.1169	1. Overall
2. Blume Beta	.1270	2. Blume
3. Vasicek Beta	.1289	3. Unadju
4. Unadjusted Beta	.1348	4. Full Hi
5. Beta = 1	.1378	5. Vasicek
6. Full Historical	.1436	6. Beta =

\*All differences are statistically significant

Source: E. J. Elton, M. J. Gruber, and T. J. Urich (1978), 1378.

Item 14, page 33

a from history, using a fixed-regression. These models estimating model, one where the (1.1) found that "the use of the will overestimate the portfolio coefficients are changing over variability from the residual risk, the relationship between residual

to eliminate some of the problems in creating a beta coefficient that however, these models have their

that much of the cause of beta. They suggest that estimates of beta data rely on the past returns, and return. Thus, they say that beta data can be expected to exhibit the underlying ex-ante security return obey a stationary distribution

ent needed to estimate a beta. If beta is stable, then researchers believe the beta is stable or predictable. The methods of estimating the beta results down into error, but they did test some inferences. The methods tested, which in the Merton study, were the fol-

age correlation coefficient for the

portfolio Residual Risk and Diversification, 16 (March 1981), 95-112. The best betas and reduce residual error, see Systematic Risk: Estimates of 'Raw' Beta and the Heteroskedasticity of Return, 20 (June 1985), 127-50. "The Telescopic Effect of Past Return", 19 (March 1984), 1.

2. A perfect correlation of 1.0
3. The Vasicek method, similar to the Bayesian method described previously
4. The full historical method, which uses the average coefficient of five years of data for the particular stock or portfolio

Their results, shown in Exhibit 4-24, indicate that in both time periods studied, the overall mean was the superior method of predicting correlations—better than the more sophisticated methods. The *overall mean* is a very cynical method of forecasting. It is tantamount to saying that the best forecast is just an average for the whole sample. Any added efforts to refine the estimate for a single security are fruitless.

In a more recent study of a variety of commercially available beta services, Harrington (1981) found that some services did demonstrate a measure of forecast skill. Although none of the forecasts were accurate, some did perform better than others and did so consistently. The study results for a sample of utility stocks are shown in Exhibit 4-25. These results are those for a forecast horizon of three years. Although a number of periods and samples were tested in the study, the magnitude of the errors is similar. The study also looked at the use of these betas in the CAPM framework to forecast returns and found those were even more difficult to forecast.

Thus, we find that betas for individual securities are not particularly stable, nor do most securities remain in the same risk class from one period to another. Analysis of mean-squared errors shows that although some components of error can be reduced, the major portion of standard error can be lessened only by adding more securities to the portfolio. Finally, we find that the best way to estimate a correlation coef-

Exhibit 4-24

Average Absolute Error\* for Correlation Coefficient Forecasts

FIRST FIVE YEARS		SECOND FIVE YEARS		COMBINED	
1. Overall Mean	.1169	1. Overall Mean	.1415	1. Overall Mean	.1292
2. Blume Beta	.1270	2. Blume Beta	.1499	2. Blume Beta	.1385
3. Vasicek Beta	.1289	3. Unadjusted Beta	.1539	3. Vasicek Beta	.1419
4. Unadjusted Beta	.1348	4. Full Historical	.1545	4. Unadjusted Beta	.1444
5. Beta = 1	.1378	5. Vasicek	.1548	5. Full Historical	.1491
6. Full Historical	.1436	6. Beta = 1	.1776	6. Beta = 1	.1577

\*All differences are statistically significant unless grouped by a bracket.

Source: E. J. Elton, M. J. Gruber, and T. J. Urlich, "Are Betas Best?" *Journal of Finance*, 33 (December 1978), 1378.

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Exhibit 4-25

**Forecast Errors from Commercially Available Beta Sources  
(Based on Three-Year Horizon for 52 Utilities)**

	MEAN SQUARED ERROR	BIAS	INEFFI- CIENCY	RAN- DOM ERROR	MEAN FORE- CAST
Beta = sample mean	.086635	.047169	.006294	.033171	.6348
Beta = 1	.227116	.189320	.000773	.037023	1.0000
Market Model	.093383	.021973	.049222	.022188	.4709
Market Model (adjusted)	.091748	.028899	.031198	.031649	.5933
Merrill Lynch	.122362	.053966	.046581	.021815	.6348
Merrill Lynch (adjusted)	.135069	.079422	.033839	.021806	.7031
Barr Rosenberg (historical)	.114077	.054682	.036136	.023257	.7554
Barr Rosenberg (short-term fundamental)	.099353	.058151	.009978	.031223	.7860
Barr Rosenberg (long- term fundamental)	.116526	.076802	.008655	.031066	.8312
Value Line	.079898	.038051	.010821	.031025	.7241

Source: D. R. Harrington, "Predicting Returns Using Commercially Available Beta Forecasts" (Paper presented at the Southern Finance Association Meeting, November 1981), p. 11.

efficient is to use the average coefficient for an entire universe of stocks. If historical betas are not particularly stable and we cannot refine them significantly, they cannot be very useful in estimating future betas. After reviewing these data, one of my colleagues commented: "Stock betas are very nearly random variables with almost no economic content." Is that so?

5. IMPACT OF MACROECONOMIC CHANGE ON BETA:  
THE IMPACT OF INTEREST RATES

If beta changes over time, perhaps it is due to fundamental shifts in the structure of the economy—major political, social, or economic events, not just randomness. McDonald (1985) suggested that "if an extended inflationary period caused a structural shift in the market components, the significance of an inflation factor appended to the single-factor CAPM would simply reflect the rigidity of a static model."<sup>19</sup> Using a method that could identify any cross-sectional shifts concentrated in a single pe-

<sup>19</sup>Bill McDonald, "Making Sense Out of Unstable Alphas and Betas," *Journal of Portfolio Management*, Winter 1985, p. 20.

### Estimating Beta

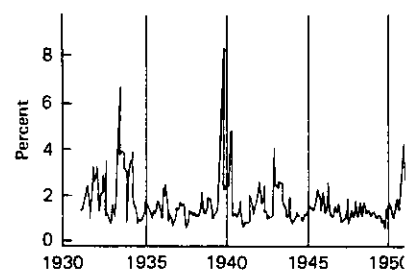
riod, he found, as shown in Exhibit 4-25, that the choice of a time period over which analysts or researchers using historical data for the choice of a time period over which major periods of nonstationarity.

The major structural changes in the economy, accompanied by major changes in interest rates, counts for uncertainty about the levels of interest rates. Exhibit 4-26 shows that, if the line is uncertain, the analyst is uncertain about the returns for the major periods of nonstationarity. Distributions X, Y, and Z represent assets with betas of 0.5, 1.0 and 1.5, respectively. They are shown sideways, to demonstrate that the changes in interest rates, that is, changes in the price of risk, accounted for in this risk is the price of risk.

Some researchers have looked at changes on the systematic risk, which is widely used in analyzing bonds, and yield-curve shifts on the price of risk.

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### Percent of Securities with Si



Source: Adapted from Bill McDonald, "Making Sense Out of Unstable Alphas and Betas," *Journal of Portfolio Management*, Winter 1985, p. 21.

<sup>20</sup>Duration is a measure of the year of the year in value terms. For a general description and Rupinder S. Sidhu, "The Many Uses of Duration," *Journal of Financial Economics* 36 (July-August 1980), 58-72. See Ronald G. Reisman, "Duration and the Price of Risk," *Journal of Financial Economics* 36 (July-August 1980), 58-72. See Ronald G. Reisman, "Duration and the Price of Risk," *Journal of Financial Economics* 36 (July-August 1980), 58-72.

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# Available Beta Sources for 52 Utilities)

INEFFICIENCY	RANDOM ERROR	MEAN FORECAST
.006294	.033171	.6348
.000773	.037023	1.0000
.049222	.022188	.4709
.031198	.031649	.5933
.046581	.021815	.6348
.033839	.021806	.7031
.036136	.023257	.7554
.009978	.031223	.7860
.008655	.031066	.8312
.010821	.031025	.7241

Commercially Available Beta Forecasts" (Paper presented at the American Academy of Management, November 1981), p. 11.

for an entire universe of stocks. If we cannot refine them in estimating future betas. After we commented: "Stock betas are not purely economic content." Is that

BETA:

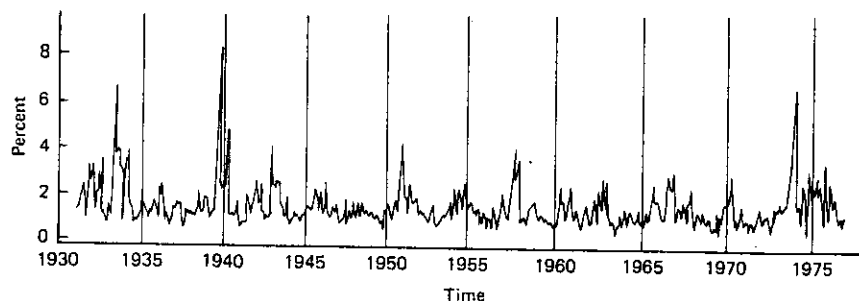
due to fundamental shifts in the social, or economic events, not stated that "if an extended inflation in the market components, the led to the single-factor CAPM model."<sup>19</sup> Using a method of shifts concentrated in a single period, he found, as shown in Exhibit 4-26, that significant shifts occurred in 1933, 1939-41, and 1974-75. These shifts coincided with major economic upheavals. On the basis of these results, McDonald suggested that analysts or researchers using historical data must exercise caution in the choice of a time period over which to estimate a beta, in order to avoid major periods of nonstationarity.

The major structural changes that McDonald identified were accompanied by major changes in interest rates. Notice that the beta accounts for uncertainty about the economic scenario, not for changes in the levels of interest rates. Exhibit 4-27 shows that because the market line is uncertain, the analyst is uncertain whether scenario A, B, or C will occur, and that the returns for higher beta assets are more uncertain. Distributions X, Y, and Z represent the systematic risk associated with assets with betas of 0.5, 1.0 and 1.5, respectively. Note, the distributions are shown sideways, to demonstrate the systematic risk. What is not accounted for in this risk is the potential for shifts in the overall level of interest rates, that is, changes in the intercept.

Some researchers have looked explicitly at the effect of interest rate changes on the systematic risk of assets. Borrowing a measure of risk widely used in analyzing bonds, duration,<sup>20</sup> a measure of the impact of yield-curve shifts on the price of a bond, they have attempted to meld

Exhibit 4-26

## Percent of Securities with Significant Shift 1931-75 (monthly)

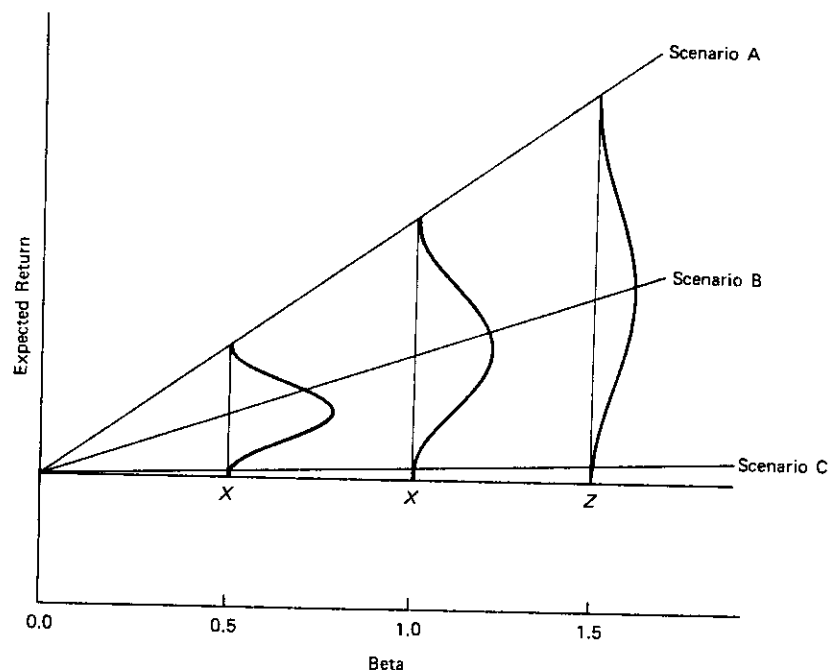


Source: Adapted from Bill McDonald, "Making Sense Out of Unstable Alphas and Betas," *Journal of Portfolio Management*, Winter 1985, p. 21.

<sup>20</sup>Duration is a measure of the years until half the investment will be received in present value terms. For a general description of bond duration and its uses, see Frank K. Reilly and Rupinder S. Sidhu, "The Many Uses of Bond Duration," *Financial Analysts Journal*, 36 (July-August 1980), 58-72. See Ronald Lanstein and W. F. Sharpe, "Duration and Security Risk," *Journal of Financial and Quantitative Analysis*, November 1978, pp. 653-68, for a description of duration as it applies to equities.

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**Exhibit 4-27**  
**Multiscenario Risk and the CAPM**



interest rate risk with the kind of risk inherent in the CAPM. Boquist, Racette, and Schlarbaum (1975) show that a security's beta can be described as a function of duration. There has been considerable discussion<sup>21</sup> about the relevance of this measure, whether it captures systematic, or unsystematic risk, and how it might be used. While this certainly is an innovative attempt to join two sorts of risk, we are not certain of its usefulness. Nevertheless, at least one money management organization has created duration betas.<sup>22</sup> These duration betas can be quite different from the betas for the securities. Exhibit 4-28 provides a list of the expected rates of return, durations, betas, and duration betas (the duration of the stock divided by the duration of the market). The

<sup>21</sup>See, for instance, R. Lanstein and W. F. Sharpe, "Duration and Security Risk," *Journal of Finance and Quantitative Analysis*, 13 (November 1978), 653-68; M. Livingston, "Duration and Risk Assessment for Bonds and Common Stocks: A Note," *Journal of Finance*, 33 (March 1978), 293-95; and John S. Bildersee and G. S. Roberts, "Beta Instability When Interest Rate Levels Change," *Journal of Financial and Quantitative Analysis*, 16 (September 1981), 379-80.

<sup>22</sup>Drexel, Burnham, Lambert, Inc., has published duration betas.

**Analysts' Estimates**

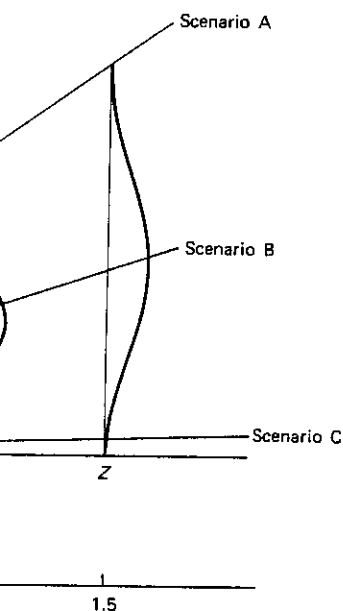
	EXPECTED RETURN
McDonald's	12.7%
Times Mirror	12.9
Digital	11.6
Baxter Travenol	11.7
Northwest Bankcorp	13.4
Western Bankcorp	15.8
Burroughs	10.9
Manufacturers Han-	
over Bank	14.6
Pfizer	11.7
Jefferson Pilot	11.7
Middle South Utili-	
ties	15.3
Kimberly Clark	14.2
Eastman Kodak	11.4
Gulf Oil	16.1
Revlon	11.1
Mobil	15.2
American Home	
Prods.	11.3
International Har-	
vester	17.7
IBM	11.9

Source: Adapted in part from Tony Estep, N  
Common Stocks," *Journal of Portfolio Manag*

expected rates of return are estimated by management organization; the calculations are done by analysts. The information in the table is an example of how beta, the risk of a security, is a function of the impact of changes in interest rates on the security. The risk an investor may be taking is the risk of a change in the

Still, beta (or relative volatility) is a measure of the kind of risk that should be imposed on a security and will vary from our forecasts of the future. Securities are profoundly influenced by macroeconomic events. Other firms' returns have been dominated by microeconomic, market power, patent protection, market power, patent protection, market power, patent protection, no firm and thus no security.

27  
the CAPM



herent in the CAPM. Boquist, a security's beta can be de- has been considerable measure, whether it captures sys- might be used. While this cer- vo sorts of risk, we are not cer- least one money management 22 These duration betas can be securities. Exhibit 4-28 provides sions, betas, and duration betas e duration of the market). The

harpe, "Duration and Security Risk," ovember 1978), 653-68; M. Livingston, mmon Stocks: A Note," *Journal of Fi-* ee and G. S. Roberts, "Beta Instability nancial and Quantitative Analysis, 16

shed duration betas.

Exhibit 4-28

## Analysts' Estimates of Risk and Return

	EXPECTED RETURN	BETA	DURATION	DURATION BETA
McDonald's	12.7%	1.53	35.7	1.31
Times Mirror	12.9	1.33	24.3	0.86
Digital	11.6	1.27	42.3	1.51
Baxter Travenol	11.7	1.19	41.3	1.51
Northwest Bankcorp	13.4	1.17	23.9	0.88
Western Bankcorp	15.8	1.09	16.4	0.60
Burroughs	10.9	1.09	43.8	1.61
Manufacturers Hano- ver Bank	14.6	1.07	17.4	0.64
Pfizer	11.7	1.07	30.4	1.12
Jefferson Pilot	11.7	1.03	31.4	1.15
Middle South Utili- ties	15.3	1.03	14.0	0.51
Kimberly Clark	14.2	0.98	19.0	0.69
Eastman Kodak	11.4	0.98	33.6	1.23
Gulf Oil	16.1	0.97	14.4	0.53
Revlon	11.1	0.97	36.4	1.35
Mobil	15.2	0.96	16.3	0.60
American Home Prods.	11.3	0.96	33.2	1.22
International Har- vester	17.7	0.96	13.5	0.50
IBM	11.9	0.95	28.7	1.06

Source: Adapted in part from Tony Estep, N. Hanson, and C. Johnson, "Sources of Value and Risk in Common Stocks," *Journal of Portfolio Management*, Summer 1983, p. 8.

expected rates of return are estimates made by the analysts at one money management organization; the durations were also developed by the analysts. The information in the exhibit is meant only to provide an example of how beta, the risk of systematic change, and duration, the impact of changes in interest rates, can lead to quite different ideas about the risk an investor may be taking with any security.

Still, beta (or relative volatility) does represent a very important kind of risk that should be important to investors: over time, returns do and will vary from our forecasts. Some firms and the returns from their securities are profoundly influenced by socioeconomic and political events. Other firms' returns have been (and perhaps will continue to be) dominated by microeconomic, firm-specific factors: superior management, market power, patent protection, or process innovation. Nonetheless, no firm and thus no security can escape the direct or indirect effects

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of events in the larger world. It is the desire to find a way to measure this macroeconomic sensitivity that spurs the search for a better beta. Despite the instability of historical betas, the concept of beta is not easily dismissed.

### III. FUNDAMENTAL AND CREATIVE BETA PREDICTION

Many analysts believe that we are simply putting too much emphasis on history. Beta is likely to appear nonstationary because a firm's risk conditions change. The problem with instability is that we do not know whether risk is changing or whether our statistical techniques are at fault. History, as usual, presents problems and the future remains unknown.

Other methods of estimating beta have been devised. Beaver, Kettler, and Scholes (1970) attempted to understand the underlying determinants of beta. If we knew what determined beta, we could then use the same factors to estimate it. Beaver, Kettler, and Scholes used ratios from the firms' financial statements and then regressed these ratios against betas derived using the market model. This method, called *multivariate analysis*, is similar to the market model, but the regression includes a larger number of variables in the formula.

Exhibit 4-29 shows the coefficients of the regressions that Beaver, Kettler, and Scholes formed. Their regressions were more stable than those derived using simple historical returns and showed promise for better beta estimates. Remember, however, that these data were still cal-

Exhibit 4-29

#### Contemporaneous Association of Beta with Accounting Measures of Risk (Correlation Coefficients)

	INDIVIDUAL STOCKS		PORTFOLIOS (5 STOCKS)	
	1947-56	1957-66	1947-56	1957-66
Payout	-.49	-.29	-.79	-.50
Growth	.27	.01	.56	.02
Leverage	.23	.22	.41	.48
Liquidity ratio	-.13	.05	-.35	.04
Size of firm	-.06	-.16	-.09	-.30
EPS variability	.66	.45	.90	.82
Total returns	.44	.23	.68	.46

Source: W. Beaver, D. Kettler, and M. Scholes, "The Association between Market Determined and Accounting Determined Risk Measures," *Accounting Review*, 45 (October 1970), 669.

culated from historical data—but in addition to historical returns.

Other researchers have devised a beta that is called *fundamental* because it is based on specific variables that we believe determine a security's risk. Rosenberg and his associates ultimately produced Rosenberg's six categories to develop beta estimates. These six categories, or market variability category, factors (such things as historical betas and the residual errors) were ranked in a study. Such factors as price-earnings ratio, size, and industry were ranked in importance as number one, two, three, etc. Although called fundamental, the factors are derived from the market model.

By the way, Rosenberg and his associates found that systematic (microeconomic) risk is a source of a substantial portion of the total risk. Furthermore, the error from the regression suggests that unsystematic risk is also a source of risk.

Corporate financial experts have developed the concept of leverage (the amount of debt financing relative to total capitalization) as a determinant of risk. Factors that affect the risk of a firm should also be determinants of its beta.

Hamada (1972) described the relationship between the beta of a stock and its leverage. McKibben (1973), Logue and McKibben (1970), Breen and Lerner (1973), and Fuller and Kerr (1980) have also studied the impact of the effect of lever-

<sup>29</sup>See, for example, D. J. Thompson, "The Determinants of Beta: Earnings Multiples, and Asset Growth. A Fundamental Determinants of Beta: N. Goetzman, "Accounting Numbers"; William Beaver and M. Scholes, "Accounting Determinants of Beta," *Journal of Financial and Quantitative Analysis*, 10 (1975), 101-12. Rosenberg and W. McKibben, "The Prediction of Beta from Fundamental Data," *Journal of Financial and Quantitative Analysis*, 10 (1975), 123-35.

<sup>30</sup>Ned C. Hill and B. K. Stone, "The Impact of Financial Leverage: A Risk-Component Approach," *Journal of Financial and Quantitative Analysis*, 10 (1975), 137-50. This study summarizes the research in the area of determining beta, in addition to examining the impact of leverage.

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the search for a better beta.  
concept of beta is not eas-

## CREATIVE BETA ON

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## a with Accounting Measures Coefficients)

STOCKS	PORTFOLIOS (5 STOCKS)	
	1947-56	1957-66
29	-.79	-.50
01	.56	.02
22	.41	.48
05	-.35	.04
16	-.09	-.30
45	.90	.82
23	.68	.46

association between Market Determined and  
ew, 45 (October 1970), 669.

culated from historical data—but historical financial ratios were used in addition to historical returns.

Other researchers have developed fundamental betas.<sup>23</sup> This type of beta is called *fundamental* because it is based on many of the firm-specific variables that we believe—intuitively or theoretically—can affect a security's risk. Rosenberg and Marathe (1975), in a major study which ultimately produced Rosenberg's fundamental beta, used 54 factors in six categories to develop beta estimates. Eleven of the 14 factors in the market variability category, factors derived from a market model regression (such things as historical beta, beta squared, and beta multiplied by the residual errors) were ranked as the 11 most important factors in this study. Such factors as price-earnings ratio and return on equity were ranked in importance as number 40 and number 36, respectively. Although called fundamental, the factors of primary importance were those derived from the market model using historical returns.

By the way, Rosenberg and Marathe also attempted to predict unsystematic (microeconomic) risk. As we have seen, this risk can be a source of a substantial portion of the total risk for individual assets. Furthermore, the error from the regressions is usually so large that we might suspect that unsystematic risk could instead be systematic or predictable.

Corporate financial experts have long believed that financial leverage (the amount of debt financing a company's assets) and operating leverage (the relationship of fixed and variable costs) are fundamental factors that affect the risk of a company. Thus, they conclude that they should also be determinants of the risk of a stock.

Hamada (1972) described the impact that changes in leverage should have on the beta of a stock; the results of tests by Rosenberg and McKibben (1973), Logue and Merville (1972), Beaver, Kettler, and Scholes (1970), Breen and Lerner (1973), Melicher and Rush (1974), Hill and Stone (1980), and Fuller and Kerr (1981) provide conflicting answers regarding the impact of the effect of leverage on beta.<sup>24</sup>

<sup>23</sup>See, for example, D. J. Thompson, "Sources of Systematic Risk in Common Stock," *Journal of Business*, 46 (1973), 173-87, who used covariant forms of dividends, earnings, earnings multiples, and asset growth. Among others, the following have also looked at the fundamental determinants of beta: N. Gonedes, "Evidence on the Information Content of Accounting Numbers"; William Beaver and J. Manegold, "The Association between Market-Determined and Accounting-Determined Measures of Systematic Risk: Some Further Evidence," *Journal of Financial and Quantitative Analysis*, 10 (June 1975), 231-84; and Barr Rosenberg and W. McKibben, "The Prediction of Systematic and Specific Risk in Common Stock," *Journal of Financial and Quantitative Analysis*, 8 (March 1973), 317-34.

<sup>24</sup>Ned C. Hill and B. K. Stone, in "Accounting Betas, Systematic Operating Risk, and Financial Leverage: A Risk-Composition Approach to the Determinants of Systematic Risk," *Journal of Financial and Quantitative Analysis*, 15 (September 1980), 595-637, summarize the research in the area of determining the fundamental, corporate factors behind beta, in addition to examining the impact of operating and financial leverage.

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Creative practitioners are developing new approaches to estimating beta. For instance, researchers at Drexel, Burnham, Lambert (and earlier at Bache and Co. with American General Life Insurance Co.) have developed what they call a *market-cycle beta*. They contend that historical betas are better measured if strong trends in the stock market are taken into account. These betas are calculated by using history and are plotted over time. Exhibit 4-30 shows two of their beta series over time. The bar indicates the standard error of the beta; the dot in the middle is the estimated beta. The market cycles are indicated by the dates opposite each beta estimate. The usefulness of these betas remains to be seen.

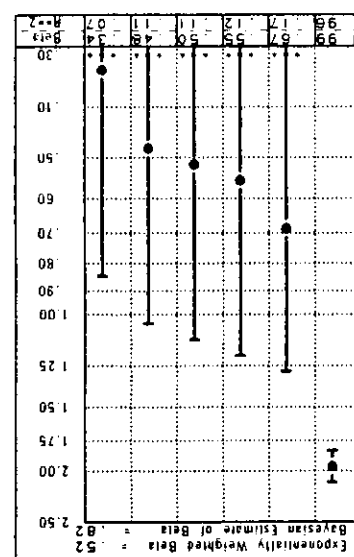
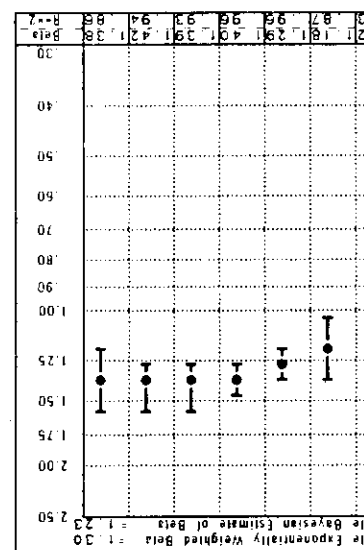
#### 1. CAN ANALYSTS ADD VALUE?

Fundamental betas are still being derived from *historical* measures of return and/or firms' risk characteristics and return changes relative to the market. In analyzing historical returns or considering the firm's future risk characteristics, can the analyst add value to the beta estimate by forecasting some of the conditions that will affect future fundamental beta measurement? We don't know for sure. Let us examine the question further by looking at the results of a study that uses analysts' estimates to mechanically adjust betas.

Using data from Lynch, Jones and Ryan, a firm that tracks analyst forecasts, Carvell and Strebel (1984) developed a beta adjusted by the uncertainty of analysts' forecasts. Since analysts' forecasts of beta are not available, Carvell and Strebel developed a beta from earnings forecasts. They contend that if the standard error of the beta from a historical regression analysis and/or the analysts' forecast variance is small, estimation risk is not important. This, they say, is the case with the stocks of large, well-researched firms. In fact, they suggest that estimation error is inversely related to market value size—and the number of analysts following the firm. Carvell and Strebel placed each stock into a portfolio according to the number of analysts that followed it. They believed that if they could eliminate unlikely results, such as a size effect, that their adjusted beta would be superior. As shown in Exhibit 4-31, they found that their adjusted betas outperformed the simple, historical beta, at least for the period they tested, 1976 to 1981. The excess return for lightly followed stocks of 0.0023 that was derived when the historical beta was used dropped to 0.0004 using their analyst-adjusted beta—the abnormal returns virtually disappeared. This study is one of the few that has used analyst forecasts to adapt historical beta.

In addition to this mechanical adaptation of beta for analysts' forecasts, practitioners have been using beta and adapting it for some time. Fouse (1976), a practitioner interested in adapting the elegant but cantankerous CAPM for use as a portfolio management tool, attempted to

Exhibit 4-30  
Market-Cycle Betas



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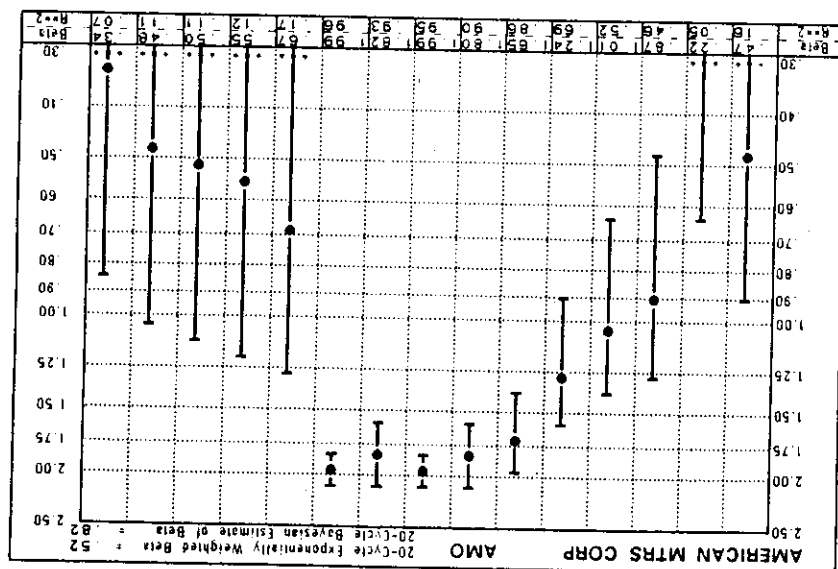
new approaches to estimating  
Burnham, Lambert (and earlier  
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ls in the stock market are taken  
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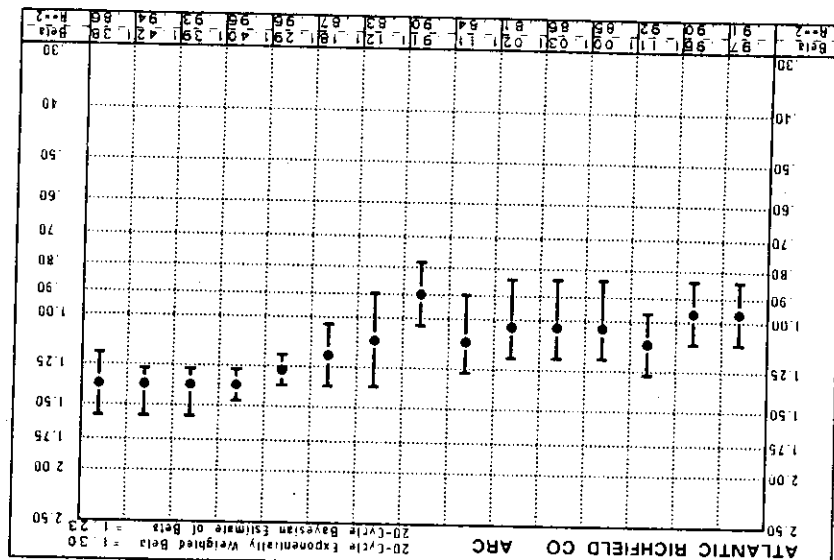
Ryan, a firm that tracks analyst  
veloped a beta adjusted by the  
analysts' forecasts of beta are  
ped a beta from earnings fore-  
error of the beta from a histor-  
sts' forecast variance is small,  
they say, is the case with the  
t, they suggest that esti-  
value size—and the number  
Strebel placed each stock into  
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performed the simple, historical  
1976 to 1981. The excess return  
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and adapting it for some time.  
adapting the elegant but can-  
management tool, attempted to

Exhibit 4-30  
Market-Cycle Betas



Source: Drexel, Burnham, Lambert, Inc., *Market-Cycle Moving Betas* (New York: August 1981).



## Exhibit 4-31

## Portfolio Risks and Excess Returns Betas Adjusted for Analyst Forecasts

PORT- FOLIO	AVERAGE NO. OF ANALYSTS	COEFFI- CIENT OF VARIATION	HISTORICAL BETA	NEW BETA	RETURN	EXCESS RETURNS— HISTORICAL BETA	EXCESS RETURNS— NEW BETA
1	22	.050*	1.038*	1.278*	.009*	-.0032*	-.0039*
2	11	.086*	1.135*	1.685*	.013*	.0005	-.0019
3	4	.101*	1.209*	1.822*	.017*	.0023*	.0004

\*Significant at 95% percent level or above.

Source: S. Carvell and P. Strebel, "A New Beta Incorporating Analysts' Forecasts," *The Journal of Portfolio Management*, Fall 1984, pp. 83-84.

## Estimating Beta

join modern capital market theory. He felt that academics, in the past, had ignored price formation in order to construct portfolios. Thus, academic ex post data, data that could never be used by even other academics. Fouse argued that an estimate based on (1) the financial data and (2) the degree to which a firm's business beta should be predictable. Fouse argued that traditionally been concerned with adding value.

Analyst-estimated or analyst-estimated beta used by practitioners and will undoubtedly be as other beta-prediction techniques, long enough to yield adequate value.

## 2. CAN BETAS BE USED FOR PRACTICAL PURPOSES?

Because we have discussed major factors, we can certainly ask whether we can still answer this question is to estimate the value of betas. In our example firm, are the following factors:

1. Five years of expected earnings
2. Five years of expected dividends
3. Five years of expected growth
4. A payout ratio
5. A return on equity
6. A projection of growth
7. Beta, usually using a market beta

The first six factors are turned into a return for the stock in question using the *discount model*,<sup>25</sup> they find the expected return.

<sup>25</sup>The dividend-discount model is

$$P_0 = \frac{D_1}{R - g}$$

where

$P$  = market price  
 $D$  = dividend  
 $n$  = the year  
 $R$  = the required rate of return  
 $\Sigma$  = the sum of

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join modern capital market theory with old, fundamental, classical value theory. He felt that academics, in their attempts to implement the CAPM, ignored price formation in order to concentrate on the behavior and construction of portfolios. Thus, academics could test their models only with ex post data, data that could never convince professional investors or even other academics. Fouse argued that because beta is an expectational estimate based on (1) the financial risk and business risk of a firm and (2) the degree to which a firm's business covaries with the total economy, beta should be predictable. Fouse expected that because analysts had traditionally been concerned with these problems, their estimates should add value.

Analyst-estimated or analyst-adjusted betas are increasingly being used by practitioners and will undoubtedly be tested just as rigorously as other beta-prediction techniques when institutions have been predicting long enough to yield adequate data for a test.

## 2. CAN BETAS BE USED FOR PRACTICAL PURPOSES?

Because we have discussed major problems in estimating beta, we must certainly ask whether we can still use beta in practice. Perhaps the best way to answer this question is to describe the use that one firm has made of betas. In our example firm, analysts make projections for

1. Five years of expected dividends
2. Five years of expected earnings
3. Five years of expected growth
4. A payout ratio
5. A return on equity
6. A projection of growth after the initial five years
7. Beta, usually using a market model estimate adjusted by the analyst

The first six factors are turned into a forecast of the expected rate of return for the stock in question. Using a variation of the *dividend-discount model*,<sup>25</sup> they find the expected return. For example, in Exhibit

<sup>25</sup>The dividend-discount model is

$$P_0 = \sum_{n=1}^{\infty} \frac{D_n}{(1+R)^n}$$

where

- $P$  = market price at time 0  
 $D$  = dividends  
 $n$  = the year from year 1 to infinity ( $\infty$ )  
 $R$  = the expected rate of return  
 $\Sigma$  = the sum

\*Significant at 95% percent level or above.

Source: S. Carvell and P. Strebel, "A New Beta Incorporating Analysts' Forecasts," *The Journal of Portfolio Management*, Fall 1984, pp. 83-84.

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## Analysts' Forecasts Used to Estimate Returns

Values at Maturity:										Growth Rate: 10.3%		Payout Ratio: 45.0%		Implicit ROE: 18.7%					
STOCK RATING	PRICE	DBL BETA	EPS	CHG. IN %		DIV.	CHG. IN %	PAYT. RATIO	GROWTH & TRANS. PERIOD					EXP. RE. TURN	PER. IOD CON. TRIB.				
				GROWTH RATE	ILMPL. ROE				ADD. YRS.	TRANS. YRS.	BETA								
American Motors Corp. (AMC)	S2	3.50	0.82	1980	-6.00	0.00		20.0%	5.0%	6.3%	4	5	1.17	17.0%	18.5%				
				1981	-3.00	0.00								14.8%					
				1982	-1.00	0.00								66.7%					
				1983	0.75	0.15													
				1984	1.50	100.0	0.30	100.0											
				1985	1.57	5.0	0.31	5.0											
				Eps Growth 1980 to 1985					98.1%										
				Div Growth 1980 to 1985					31.0%										
				Ford Motor Co. Del (F)	N2	19.88	0.40	1980	-12.83	1.20		27.9%	5.0%	6.9%	3	5	0.67	20.3%	38.4%
								1981	-7.00	1.20	0.0							18.2%	
1982	1.60	1.20	0.0											43.4%					
1983	13.00	712.5	2.00					66.7											
1984	13.00	0.0	3.00					50.0											
1985	10.76	-17.2	3.00					0.0											
Eps Growth 1980 to 1985								214.4%											
Div Growth 1980 to 1985								25.1%											
General Motors Corp. (GM)	B1	45.75	0.41					1980	-2.65	2.95		48.6%	5.0%	9.7%	3	5	0.59	19.4%	49.4%
								1981	4.75	3.05	3.4							17.8%	
				1982	11.25	136.8	5.50	80.3						32.8%					
				1983	16.00	42.2	7.50	36.4											
				1984	14.70	-8.1	7.50	0.0											
				1985	15.43	5.0	7.50	0.0											
				Eps Growth 1980 to 1985					128.6%										
				Div Growth 1980 to 1985					24.5%										
				ROR1 = 3.5%															
				ROR1 = 29.8%															
ROR1 = 22.5%																			

Source: Drexel, Burnham, Lambert, Inc., Analysts' Long Term Earnings and Dividend Forecasts (New York: September 1981).

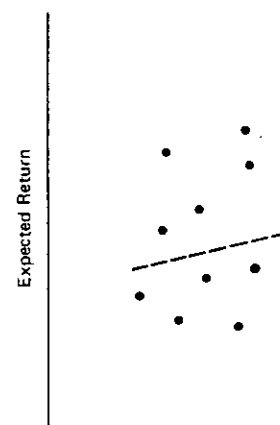
Source: Drexel, Burnham, Lambert, Inc., Analysts' Long Term Earnings and Dividend Forecasts (New York: September 1981).

## Estimating Beta

4-32 the Drexel, Burnham, Lamb American Motors is 17 percent. organizations then take this return each stock and portray them as dots, one for each stock, a line is plotted. This line, like the dashed or the expected marketwide risk-lysts. Theoretically, all stocks should be perfectly efficient. Obviously, he

The distance that any dot is (of-risk) line is called its *superior*, investment firms using this approach stock's relative attractiveness.<sup>26</sup> (lying above the line) are expected provide a superior return for the line are stocks with less attractiveness should be reconsidered if they are not be purchased.

## Expected Return and



<sup>26</sup>Recall that there have been a number of excess returns, could have come from and betas adapted for analysts' estimates of the excess returns. Care must be taken to avoid errors. The analyst faced with an excess return has a potential for profit—that is, whether the

ROR1 = 29.8%

49.4%  
17.8%  
32.8%

ROR1 = 22.5%

General Motors Corp. (GM)	B1	45.75	0.41	Eps Growth 1980 to 1985		Div Growth 1980 to 1985		214.4%	25.1%	48.6%	5.0%	9.7%	3	5	0.59	19.4%	49.4%	17.8%	32.8%
				1980	1981	1982	1983												
				-2.65	4.75	11.25	136.8	2.95	3.4										
				4.75	11.25	136.8	5.50	3.05	80.3										
				16.00	42.2	7.50	36.4	5.50	80.3										
				14.70	-8.1	7.50	0.0	7.50	0.0										
				15.43	5.0	7.50	0.0	7.50	0.0										
				Eps Growth 1980 to 1985	128.6%														
				Div Growth 1980 to 1985	24.5%														

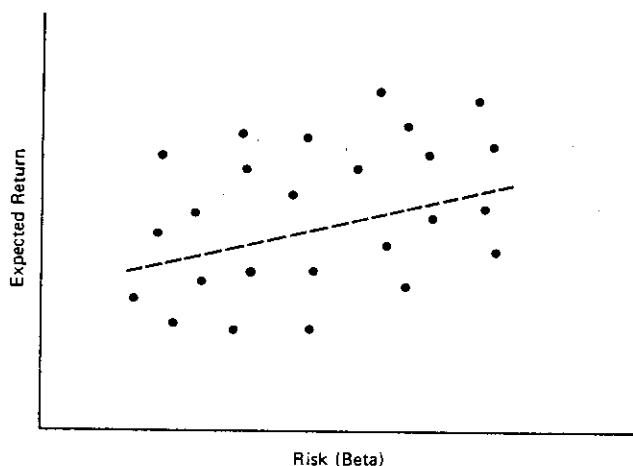
Source: Drexel, Burnham, Lambert, Inc., *Analysts' Long Term Earnings and Dividend Forecasts* (New York: September 1981).

4-32 the Drexel, Burnham, Lambert, Inc., analysts' estimated return for American Motors is 17 percent. Some money investment management organizations then take this return forecast and an estimate of beta for each stock and portray them as shown in Exhibit 4-33. To this sea of dots, one for each stock, a line of best fit (a least-squares estimate) is plotted. This line, like the dashed line in Exhibit 4-33, is the consensus or the expected marketwide risk-return trade-off forecast by these analysts. Theoretically, all stocks should plot on the line if the market were perfectly efficient. Obviously, here they do not.

The distance that any dot lies from the trade-off (or market-price-of-risk) line is called its *superior, risk-adjusted return, or alpha*. The investment firms using this approach believe that the alpha indicates the stock's relative attractiveness.<sup>26</sup> Those stocks with positive alphas (plotting above the line) are expected to outperform the market—that is, to provide a superior return for their risk. The stocks plotting below the line are stocks with less attractive prospects than average. These stocks should be reconsidered if they are already held, but they should certainly not be purchased.

Exhibit 4-33

## Expected Return and Risk for a Universe of Stocks



<sup>26</sup>Recall that there have been a number of studies that have found that the alpha, the excess return, could have come from the misestimation of beta. Time-varying models and betas adapted for analysts' estimates seem to have significantly reduced the size of the excess returns. Care must be taken to separate real excess returns from estimation errors. The analyst faced with an excess return should determine whether it is a real potential for profit—that is, whether the return is more than enough to offset the risk.

These alphas and betas depend on the analyst's skill at predicting the future. The question of whether alphas provide better information than total returns for selecting stocks can be answered. We don't know. This technique remains to be tested, but many practicing investment managers believe that alphas derived in this fashion are useful.

This example of one use of beta is one of the curious uses of efficient-market theory. A theoretical concept based on market efficiency is used to identify market inefficiencies—undervalued and overvalued securities. Despite the paradox, the process may be fruitful.

#### IV. CONCLUSION

We know

*That simple changes in the parameters of a time-series beta can result in a significant change in the resulting beta. (We do not know which are the best ways to make estimates. Consistency is a stopgap policy.)*

*That time-series betas are not good predictors of single-asset future betas.*

*That beta is a summary measure and may prove to be too austere. Much that underlies the movements of returns in the marketplace may be better described by a richer model than the CAPM. Unsystematic risk may not be irrelevant—even in the portfolio context.*

Despite these disheartening results, it is still too soon to reject beta. Academics and practitioners are using beta and are developing better tests of the predictive value of beta. More important, they are working to unravel the problems of estimating beta and are using beta to make better stock selections, examine performance, and create portfolios. We have learned that we cannot simply extrapolate the future from the past. But analysts exercising careful judgment can interpret historical data and add judgment and insight in an effort to predict the future.

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## ES

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- ch

## Estim Risk-F

The risk-free rate is usually as the minimum rate of return (premium ( $R_m - R_f$ ). Thus, an error in the risk-free rate would lead to a misestimate of the alpha of an asset or portfolio. The risk-free rate is also important for examining historical results and for testing the significance of alphas. Choosing an incorrect risk-free rate would misunderstand the source of the performance, or have poor data on the risk-free rate. It is important that we examine the risk-free rate and accept the customary 90-day Treasury bill rate. In this chapter we will discuss the empirical and theoretical problems evident in the estimation of the risk-free rate for an asset.

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Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

15. In reference to Dr. Weaver's Schedule 38, provide individual-company cost of equity calculations for each of the growth rates utilized.

Answer:

The cost of equity was calculated in Schedule 38 using the growth rate averages that are shown in Schedules 33, 34, and 35. The purpose of using average of the measures from the five company groups rather than using data from individual companies is to create a composite value that is best representative of KU and of LG&E. For this reason, I did not perform individual-company cost of equity calculations. It would have been incorrect to have done so.



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

16. Provide a copy of the source document for each of the four projections for each company shown on Schedule 35.

Answer:

The requested source documents are attached.

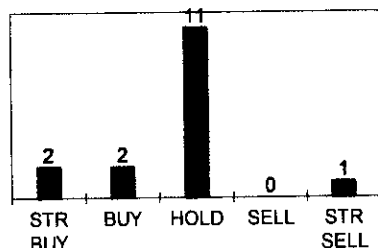


Industry: UTIL-ELEC PWR				Type: Large Blend			Zacks Rank		
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$36.31	13.3	\$6445 MM	\$1.84	5.1%	\$6725 MM	5%	5%	0%	Hold

Cinergy Corp. is one of the nation's leading diversified energy companies. Cinergy owns or operates electrical and heat plant generators that are either operational or under development domestically and internationally. It also has electric and gas transmission lines in the U.S. and abroad. Cinergy Solutions focuses on cogeneration, energy services and utility outsourcing for large industrials, municipalities, universities and other large energy consumers. Its customers include BP Amoco, Kodak and General Motors. (Company Press Release)

Ave Broker Rec	#Up	#Dn
HOLD	0	2

### Broker Recommendations



### Price/Volume Data

52-Wk High	\$38.59
Low	\$29.36
PriceChg-YTD	8%
-YTD(Rel)	-10%
Avg Dly Vol	710 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	9%
Beta	-0.04

### Shareholder Data

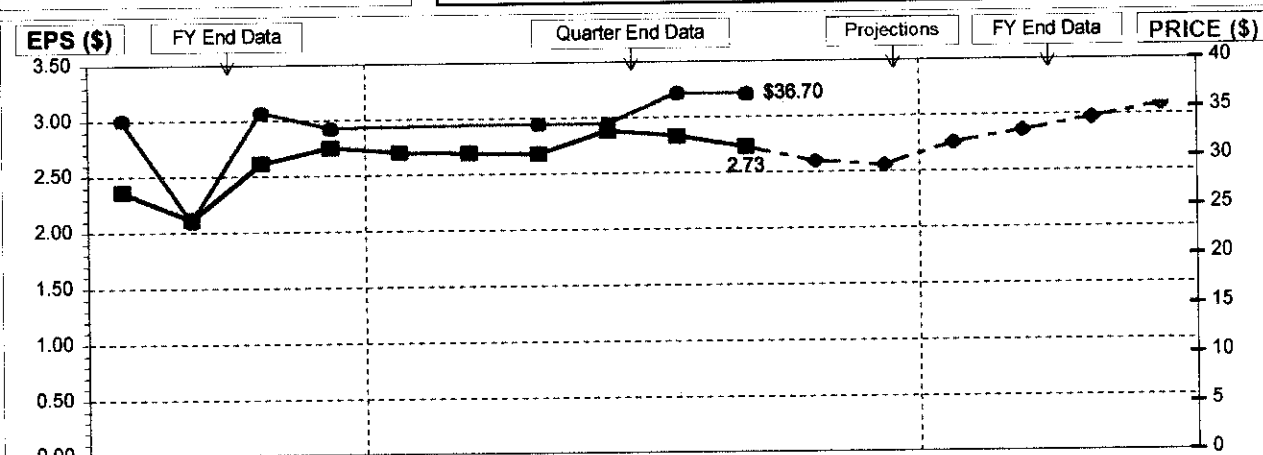
Shares Out	177.5 MM
Institutions	67.68%
Insiders	1.98%

### EPS, P/E and Growth Rates

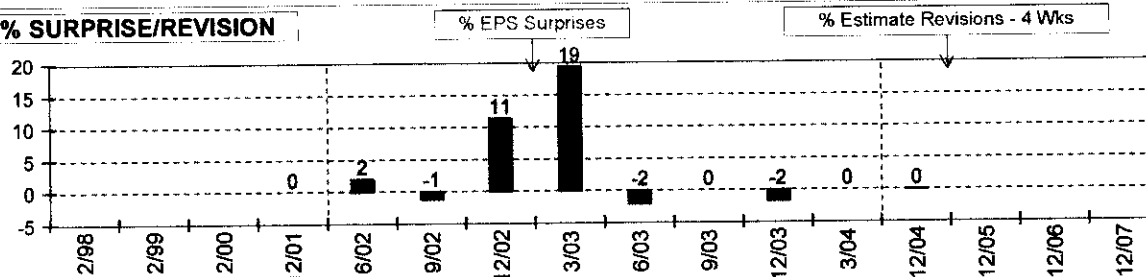
	FY	EPS	P/E	Yr/Yr
12/02 Act		2.68	12.6	-3%
12/03 Est		2.61	13.9	-3%
12/04 Est		2.76	13.2	6%
Last 5Yr				5%
Next 3-5Yr (Est)				4%

### Other Key Measures

	Current	5-Year
P/E (12 Mo)	13.3	12.4
Rel P/E	56%	
Net Margin	7%	5.4%
ROE	13.2%	14.3%
LT Debt/Cap	53%	53%



### % SURPRISE/REVISION



UTIL-ELEC PWR		Industry Comparables							Impl			
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
CINERGY CORP		8%	13.3	4%	1.8	1.0	7.0	0.67	5.1%	6.9%	13%	53%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

Latest Splits: 12/03/92 1.500

Ex-Div. Date: 10/16/03

$$(1.6 * 1.07) + 7$$

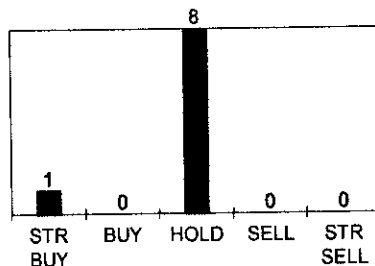
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Industry: UTIL-ELEC PWR						Type: Large Value			
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$36.88	9.9	\$6196 MM	\$2.06	5.6%	\$6063 MM	14%	4%	0%	Sell

DTE Energy is a Detroit-based diversified energy company involved in the development and management of energy-related businesses and services nationwide. Its largest operating units are Detroit Edison, an electric utility serving 2.1 million customers in Southeastern Michigan, and MichCon, a natural gas utility serving 1.2 million customers in Michigan. Detroit Edison is the Company's principal operating subsidiary. Affiliates of the Company are engaged in non-regulated businesses, including energy-related services and products.

Ave Broker Rec	#Up	#Dn
HOLD	0	0

### Broker Recommendations



### Price/Volume Data

52-Wk High	\$49.28
Low	\$34.54
PriceChg-YTD	-21%
-YTD(Rel)	-33%
Avg Dly Vol	768 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	10%
Beta	-0.07

### Shareholder Data

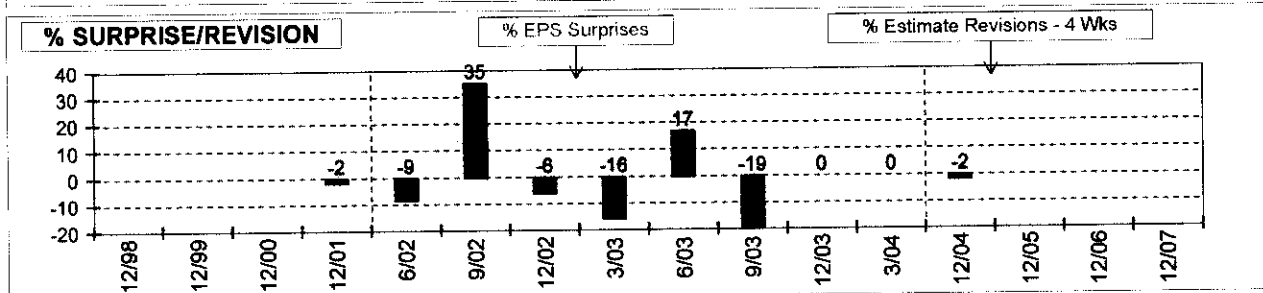
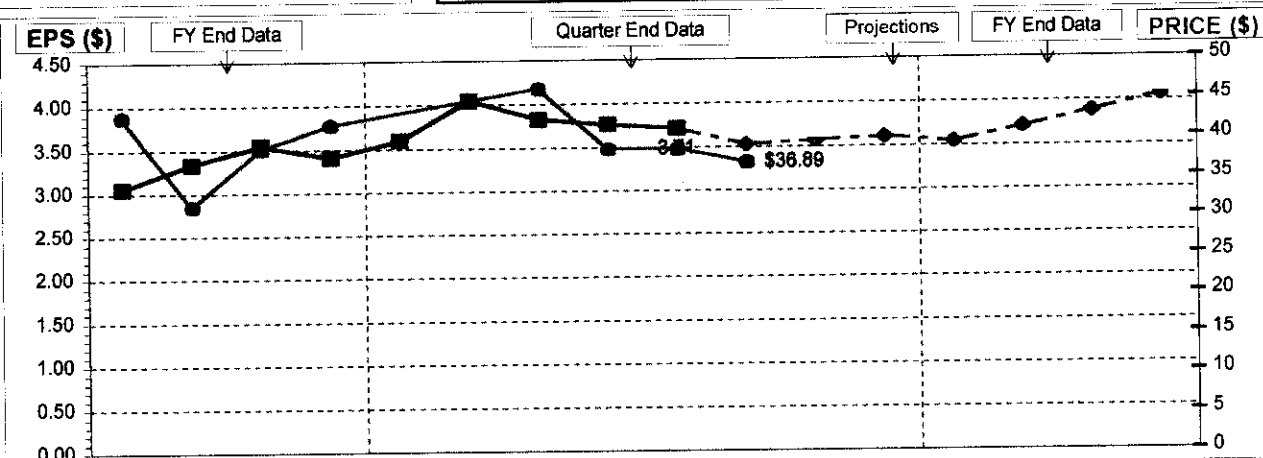
Shares Out	168.0 MM
Institutions	52.69%
Insiders	0.30%

### EPS, P/E and Growth Rates

	FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act		3.83	12.1	13%
12/03 Est		3.15	11.7	-18%
12/04 Est		3.54	10.4	13%
Last 5Yr				4%
Next 3-5Yr (Est)				5%

### Other Key Measures

	Current	5-Year Avg
P/E (12 Mo)	9.9	11.7
Rel P/E	42%	
Net Margin	8%	8.2%
ROE	12.8%	12.3%
LT Debt/Cap	61%	57%



UTIL-ELEC PWR		Industry Comparables							Impl			
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
DTE ENERGY CO		-21%	9.9	5%	1.3	1.0	4.4	1.03	5.6%	8.2%	13%	61%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

Latest Splits:

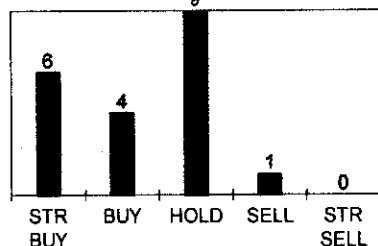
Ex-Div. Date: 09/18/03

Industry: UTIL-ELEC PWR				Type: Large Blend					
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$63.74	13.0	\$11705 MM	\$2.40	3.8%	\$9635 MM	9%	6%	4%	Hold

FPL Group, Inc. is a public utility holding company. FPL Group's principal subsidiary, FPL, is engaged in the generation, transmission, distribution and sale of electric energy. FPL Group Capital, a wholly-owned subsidiary of FPL Group, holds the capital stock and provides funding for the operating subsidiaries other than FPL. In addition, FPL Group Capital formed a new subsidiary to sell wholesale fiber-optic network capacity.

Ave Broker Rec	#Up	#Dn
BUY	0	2

Broker Recommendations



## Price/Volume Data

52-Wk High	\$67.83
Low	\$54.20
PriceChg-YTD	6%
-YTD(Rel)	-11%
Avg Dly Vol	893 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	9%
Beta	0.12

## Shareholder Data

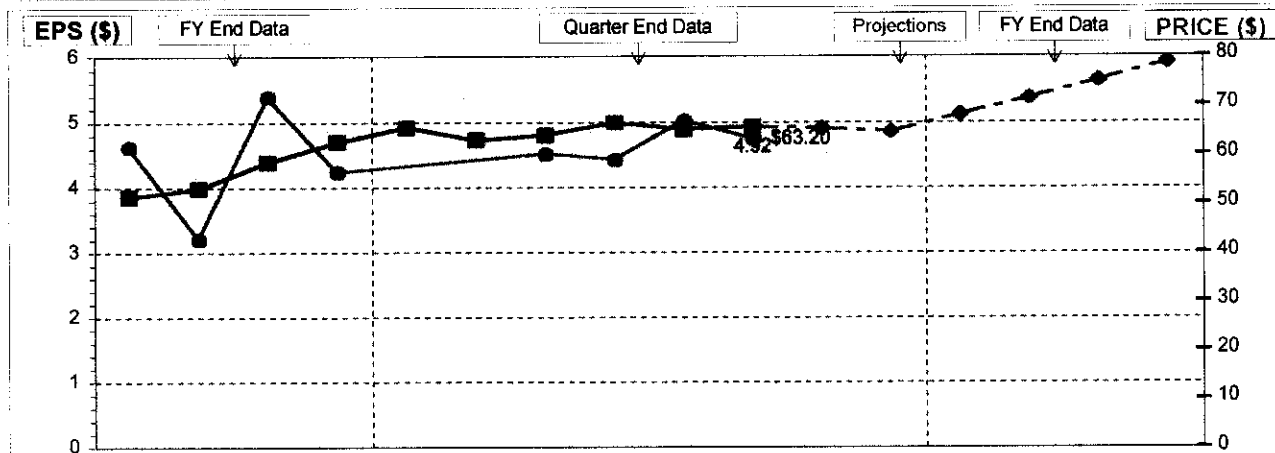
Shares Out	183.6 MM
Institutions	64.11%
Insiders	0.70%

## EPS, P/E and Growth Rates

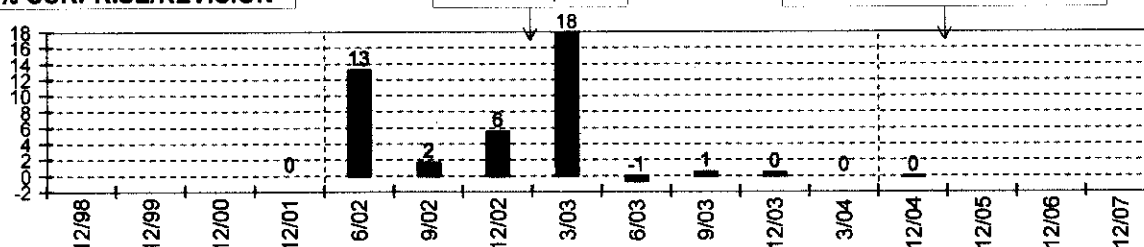
	FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act		4.80	12.5	2%
12/03 Est		4.89	13.0	2%
12/04 Est		5.11	12.5	5%
Last 5Yr				6%
Next 3-5Yr (Est)				5%

## Other Key Measures

	Current	5-Year Avg
P/E (12 Mo)	13.0	12.8
Rel P/E	54%	
Net Margin	9%	9.0%
ROE	13.4%	13.4%
LT Debt/Cap	49%	41%



## % SURPRISE/REVISION



UTIL-ELEC PWR		Industry Comparables						Impl				
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
FPL GRP		6%	13.0	5%	1.8	1.2	6.7	0.67	3.8%	9.0%	13%	49%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

Latest Splits: 02/01/85 2.000 05/02/80 2.000

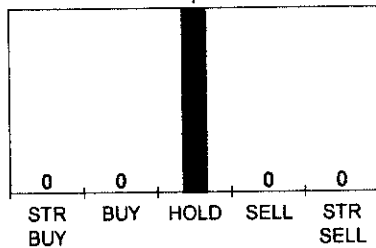
Ex-Div. Date: 08/27/03

Industry: UTIL-ELEC PWR				Type: Small Blend					
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$31.59	19.6	\$566 MM	\$1.35	4.3%	\$394 MM	9%	4%	1%	Hold

MGE Energy is a public utility holding company. Its principal subsidiary, MGE, generates and distributes electricity to more than 128,000 customers in Dane County, Wisconsin (250 square miles) and purchases, transports and distributes natural gas to nearly 123,000 customers in seven south-central and western Wisconsin counties (1,375 square miles). (Press Release)

Ave Broker Rec	#Up	#Dn
HOLD	0	0

### Broker Recommendations



### Price/Volume Data

52-Wk High	\$34.45
Low	\$25.27
PriceChg-YTD	18%
-YTD(Rel)	-1%
Avg Dly Vol	18 000s

### Exp Return/Risk

Impl Ret=Yld+Gr	
Beta	0.08

### Shareholder Data

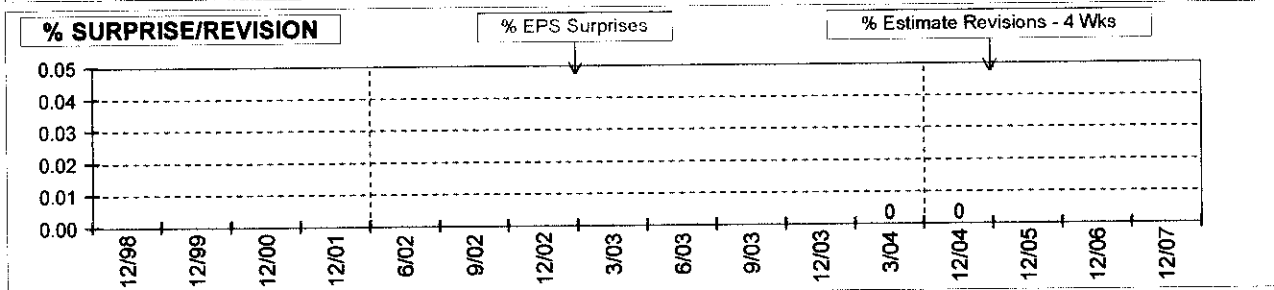
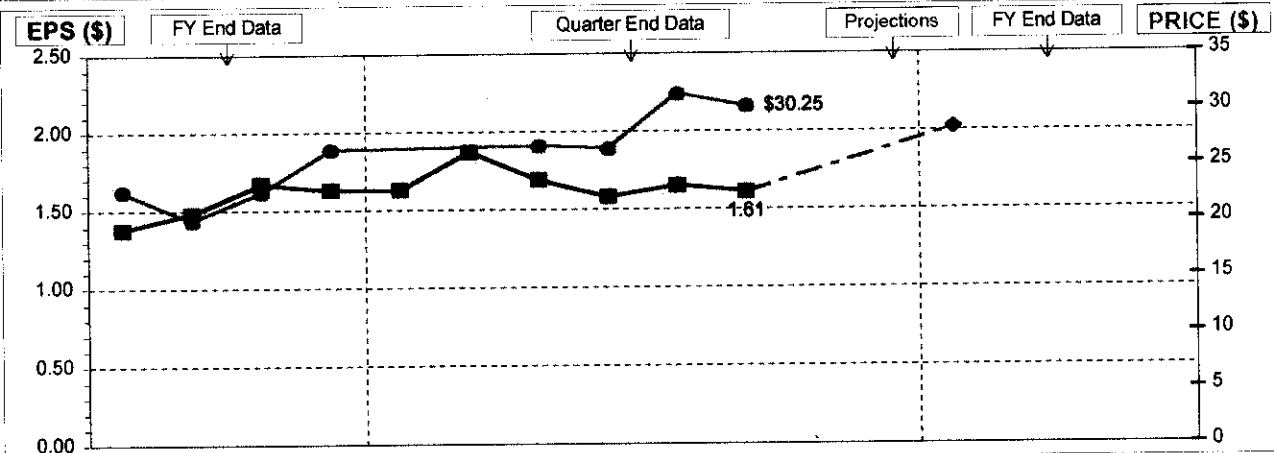
Shares Out	17.9 MM
Institutions	22.29%
Insiders	

### EPS, P/E and Growth Rates

	FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act		1.69	15.8	4%
12/03 Est		1.92	16.5	14%
12/04 Est		2.02	15.6	5%
Last 5Yr				4%

### Next 3-5Yr (Est)

Other Key Measures		5-Year
	Current	Avg
P/E (12 Mo)	19.6	15.1
Rel P/E	82%	
Net Margin	7%	8.5%
ROE	12.2%	10.8%
LT Debt/Cap	44%	31%



UTIL-ELEC PWR		Industry Comparables					Impl					
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
MGE ENERGY INC		18%	19.6		2.3	1.4	9.4		4.3%	7.3%	12%	44%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

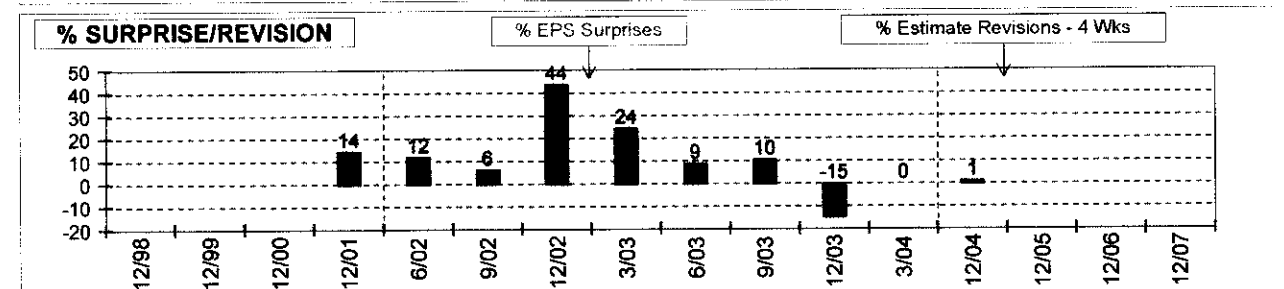
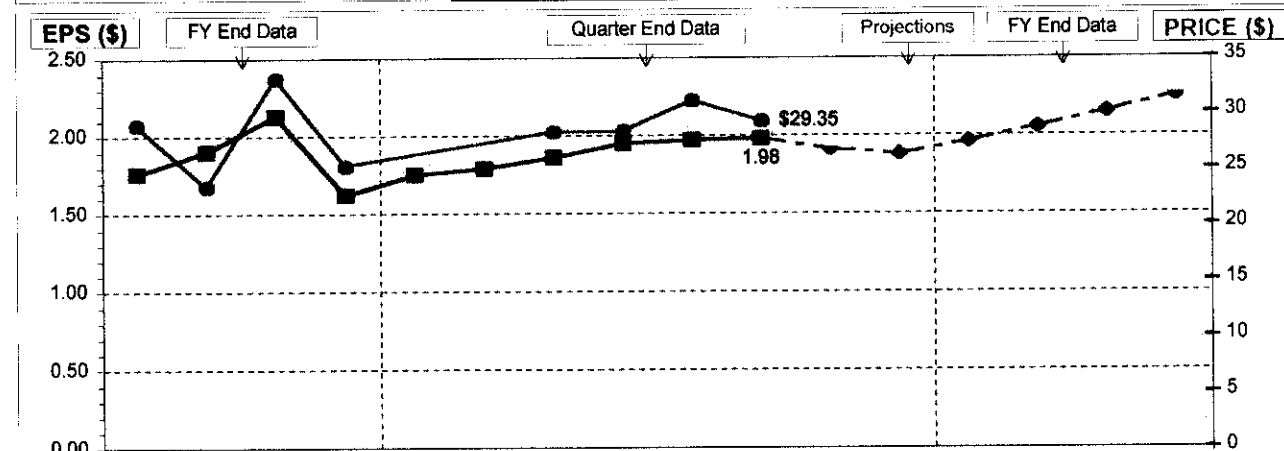
Latest Splits: 02/21/96 1.500 01/22/92 1.500

Ex-Div. Date: 08/27/03

				Industry: UTIL-ELEC PWR			Type: Large Blend			
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank	
\$29.80	15.1	\$21710 MM	\$1.40	4.7%	\$11206 MM	1%	1%	1%	Hold	

Southern Energy acquires, develops, builds, owns and operates power production and delivery facilities and provides a broad range of energy-related services to utilities and industrial companies in selected countries around the world. Southern Energy businesses include independent power projects, integrated utilities, a distribution company, and energy trading and marketing businesses outside the southeastern United States.

Ave Broker Rec			#Up	#Dn	Price/Volume Data			EPS, P/E and Growth Rates			Yr/Yr
HOLD			0	0	52-Wk High			FY	EPS	P/E	EPS Gr
					Low			12/02 Act	1.86	15.3	15%
					PriceChg-YTD			12/03 Est	1.90	15.7	2%
					-YTD(Rel)			12/04 Est	1.96	15.2	3%
					Avg Dly Vol			Last 5Yr			1%
					Exp Return/Risk			Next 3-5Yr (Est)			5%
					Impl Ret=Yld+Gr			Other Key Measures			5-Year
					Beta				Current		Avg
					Shareholder Data			P/E (12 Mo)	15.1		15.1
					Shares Out			Rel P/E	63%		
					Institutions			Net Margin	14%		11.5%
					Insiders			ROE	16.0%		14.5%
								LT Debt/Cap	57%		56%



UTIL-ELEC PWR		Industry Comparables					Impl					
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
SOUTHN COMPANY		5%	15.1	5%	2.3	1.9	8.5	0.63	4.7%	13.5%	16%	57%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

Latest Splits: 03/01/94 2.000

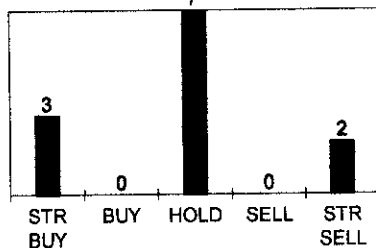
Ex-Div. Date: 10/30/03

				Industry: UTIL-ELEC PWR			Type: Large		Value	
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank	
\$36.37	13.9	\$6070 MM	\$1.04	2.9%	\$8860 MM	15%	3%	-16%	Hold	

Baltimore Gas and Electric Company consists primarily of generating, purchasing, and selling electricity and purchasing, transporting, and selling natural gas.

Ave Broker Rec	#Up	#Dn
HOLD	0	0

### Broker Recommendations



### Price/Volume Data

52-Wk High	\$37.62
Low	\$23.65
PriceChg-YTD	31%
-YTD(Rel)	9%
Avg Dly Vol	643 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	9%
Beta	0.29

### Shareholder Data

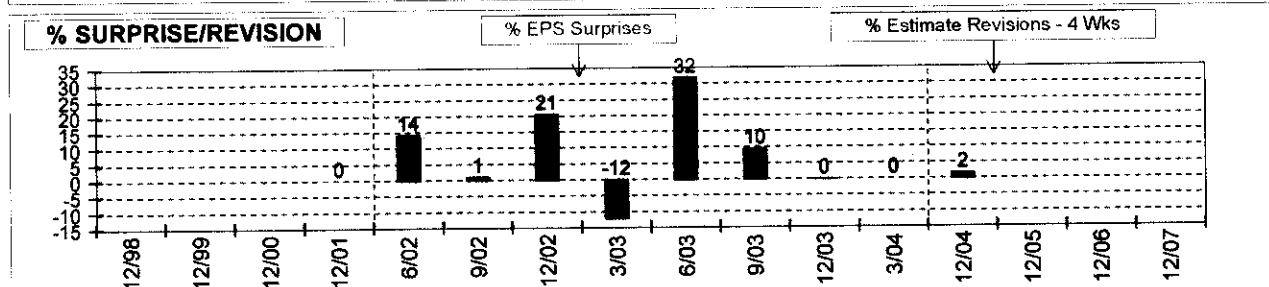
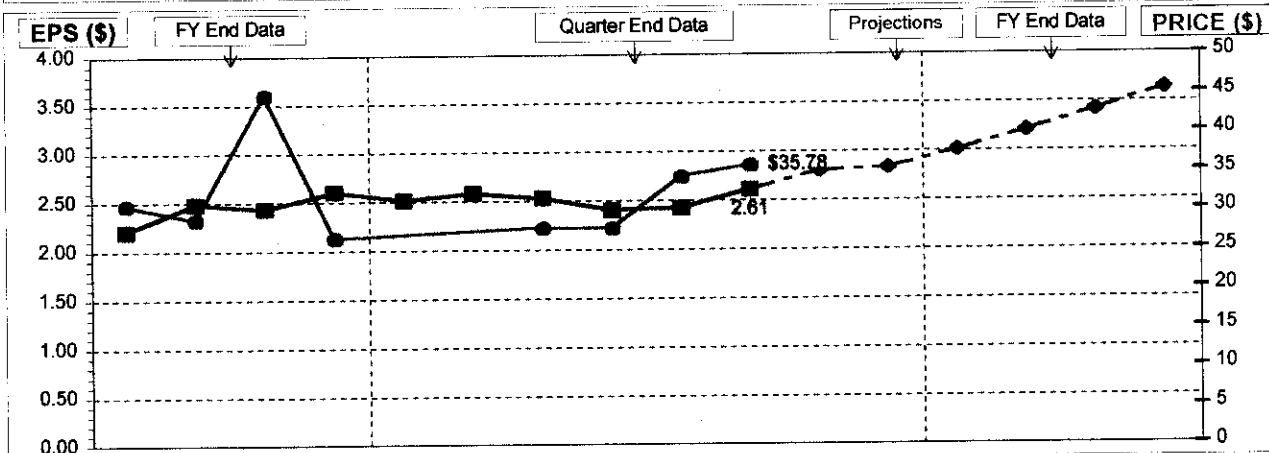
Shares Out	166.9 MM
Institutions	64.65%
Insiders	1.00%

### EPS, P/E and Growth Rates

	FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act		2.52	11.0	-3%
12/03 Est		2.77	13.1	10%
12/04 Est		3.01	12.1	9%
Last 5Yr				3%
Next 3-5Yr (Est)				7%

### Other Key Measures

	Current	5-Year Avg
P/E (12 Mo)	13.9	13.2
Rel P/E	58%	
Net Margin	3%	7.2%
ROE	11.5%	11.3%
LT Debt/Cap	56%	48%



UTIL-ELEC PWR		Industry Comparables						Impl				
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
CONSTELLATN EGY		31%	13.9	7%	1.6	0.7	6.2	0.67	2.9%	2.5%	11%	56%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

Latest Splits: 05/18/92 1.500 08/30/85 2.000

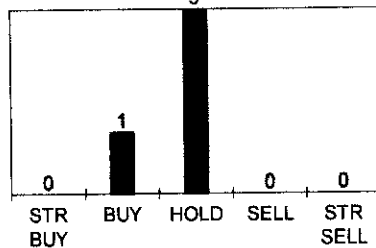
Ex-Div. Date: 09/08/03

Zacks Company Report as of 10/31/03				Next Earnings Report Date:					
				Industry: UTIL-ELEC PWR			Type: Small	Value	
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$21.20	16.4	\$484 MM	\$1.28	6.0%	\$324 MM	7%	-8%	0%	Sell

The Empire District Electric Company is an operating public utility engaged in the generation, purchase, transmission, distribution and sale of electricity in parts of Missouri, Kansas, Oklahoma and Arkansas. The Company also provides water service to several towns in Missouri.

Ave Broker Rec	#Up	#Dn
HOLD	0	0

Broker Recommendations



## Price/Volume Data

52-Wk High	\$22.44
Low	\$16.50
PriceChg-YTD	16%
-YTD(Rel)	-2%
Avg Dly Vol	51 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	16%
Beta	0.06

## Shareholder Data

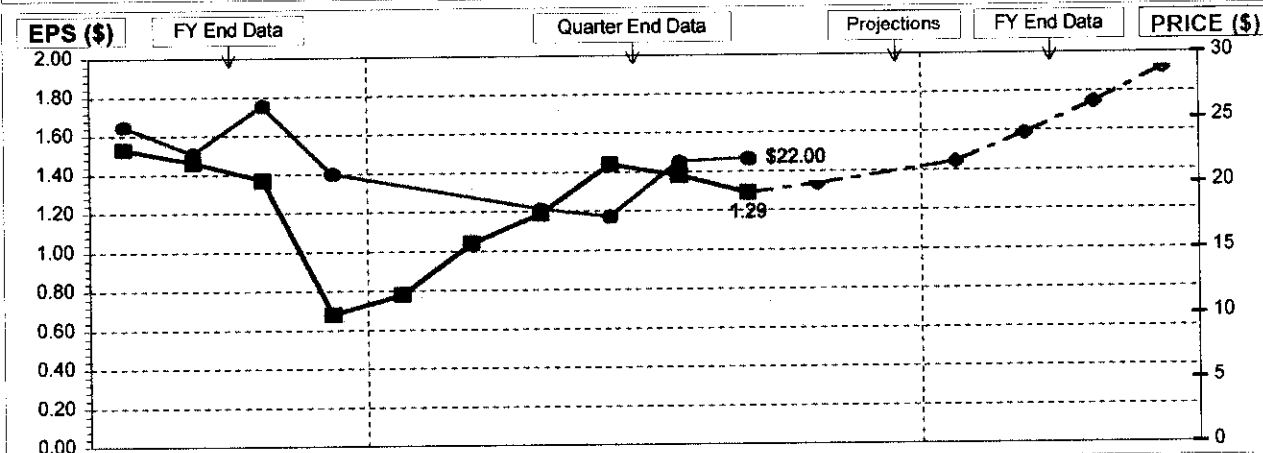
Shares Out	22.8 MM
Institutions	26.72%
Insiders	

## EPS, P/E and Growth Rates

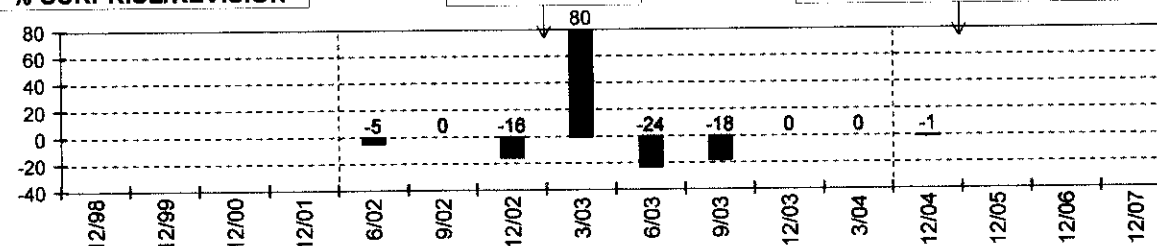
	FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act		1.24	14.7	82%
12/03 Est		1.40	15.1	13%
12/04 Est		1.44	14.7	3%
Last 5Yr				-8%
Next 3-5Yr (Est)				10%

## Other Key Measures

	Current	5-Year Avg
P/E (12 Mo)	16.4	18.6
Rel P/E	69%	
Net Margin	9%	8.3%
ROE	8.8%	9.4%
LT Debt/Cap	55%	53%



## % SURPRISE/REVISION



UTIL-ELEC PWR		Industry Comparables						Impl				
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
EMPIRE DISTRICT		16%	16.4	10%	1.5	1.5	9.2	0.98	6.0%	9.0%	9%	55%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

Latest Splits: 01/30/92 2.000

Ex-Div. Date: 08/27/03

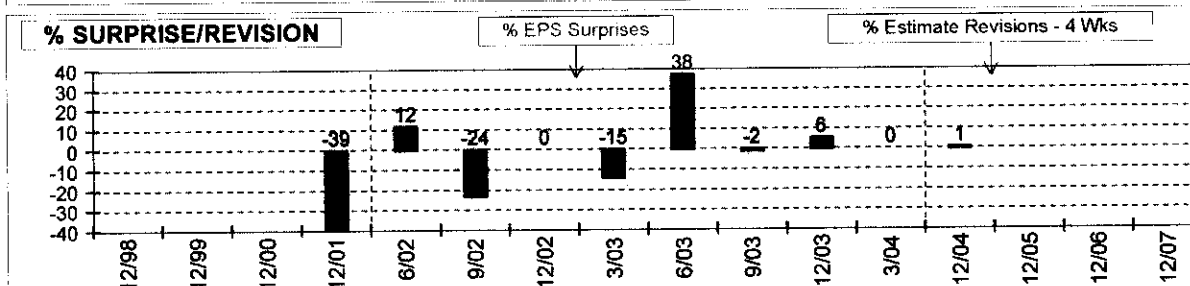
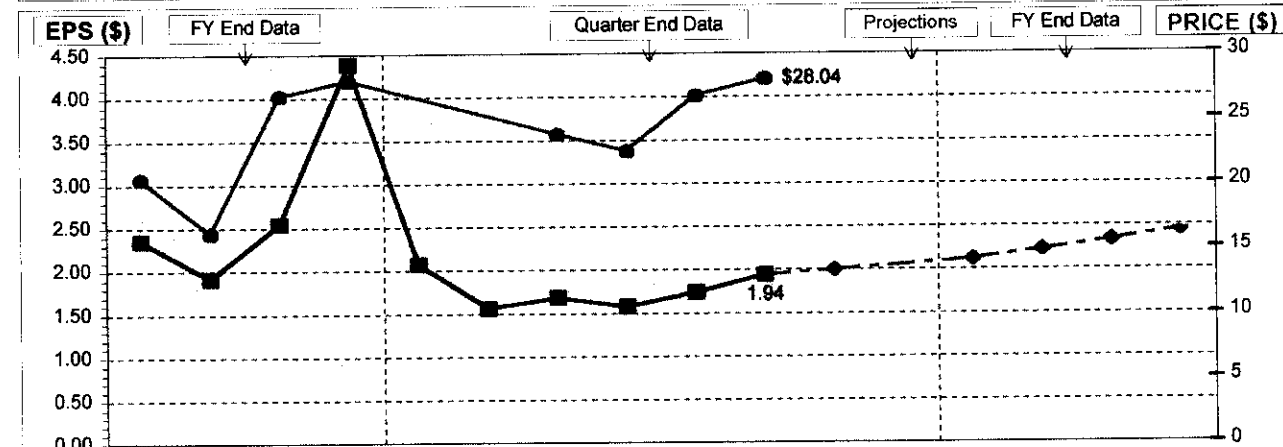
Zacks Company Report as of 10/31/03

Next Earnings Date

				Industry: UTIL-ELEC PWR			Type: Mid	Value	
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$28.28	14.6	\$1138 MM	\$0.92	3.3%	\$1414 MM	6%	-2%	3%	Buy

PNM Resources is an energy holding company based in Albuquerque, New Mexico. Its principal subsidiary is Public Service Company of New Mexico, which provides electric power and natural gas utility services to more than 1.3 million people in New Mexico. The company also sells power on the wholesale market in the Western U.S.

Ave Broker Rec			#Up	#Dn	Price/Volume Data		EPS, P/E and Growth Rates			Yr/Yr
HOLD			0	0	52-Wk High	\$29.46	FY	EPS	P/E	EPS Gr
					Low	\$19.11	12/02 Act	1.68	14.2	-62%
					PriceChg-YTD	19%	12/03 Est	1.97	14.4	17%
					-YTD(Rel)	-1%	12/04 Est	2.12	13.4	8%
					Avg Dly Vol	257 000s	Last 5Yr			-2%
					Exp Return/Risk		Next 3-5Yr (Est)			5%
					Impl Ret=Yld+Gr	8%	Other Key Measures			5-Year
					Beta	0.62		Current		Avg
					Shareholder Data		P/E (12 Mo)	14.6		9.9
					Shares Out	40.2 MM	Rel P/E	61%		
					Institutions	86.52%	Net Margin	7%		6.7%
					Insiders		ROE	7.6%		10.8%
							LT Debt/Cap	48%		50%



UTIL-ELEC PWR		Industry Comparables						Impl			
Industry #	193	Pr Chg	P/E	EPS Gr	Price/	Price/	Price/	Ret/	Div	Net	Debt/
		YTD	(12Mo)	5Yr Est	Book	Sales	CF	P/E	Yield	Margin	Cap
PNM RESOURCES		19%	14.6	5%	1.0	0.8	6.1	0.57	3.3%	6.6%	8%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%
S&P 500		19%	23.9	7%	5.2				1.6%		17%

Latest Splits:

Ex-Div. Date: 10/30/03

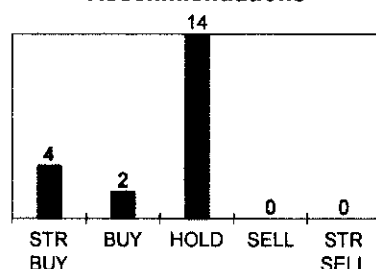


Industry: UTIL-ELEC PWR				Type: Large Value					
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr	Zacks Rank
\$43.10	12.5	\$10492 MM	\$2.24	5.2%	\$8406 MM	32%	8%	3%	Sell

CP & L Energy, Inc. is primarily engaged in the generation, transmission, distribution and sale of electricity in portions of North and South Carolina and Florida and the transmission, distribution and sale of natural gas in portions of North Carolina. The company provides these and other services through its business segments: electric, natural gas and other.

Ave Broker Rec	#Up	#Dn
HOLD	0	0

Broker Recommendations



#### Price/Volume Data

52-Wk High	\$47.38
Low	\$38.32
PriceChg-YTD	-1%
-YTD(Rel)	-17%
Avg Dly Vol	787 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	10%
Beta	0.11

#### Shareholder Data

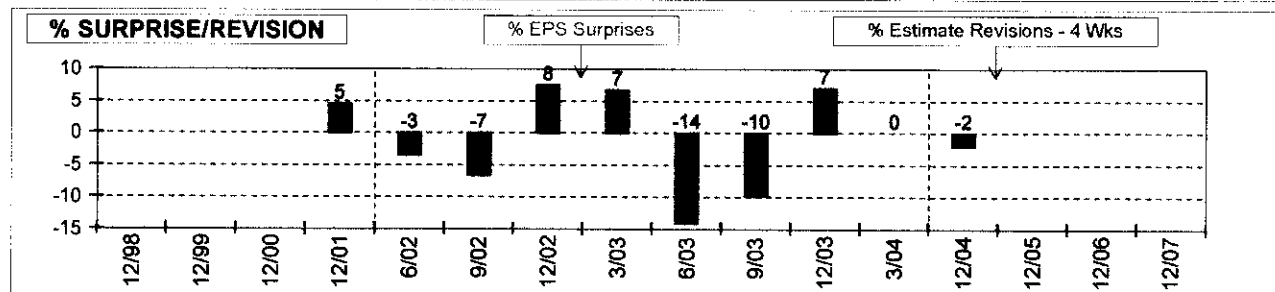
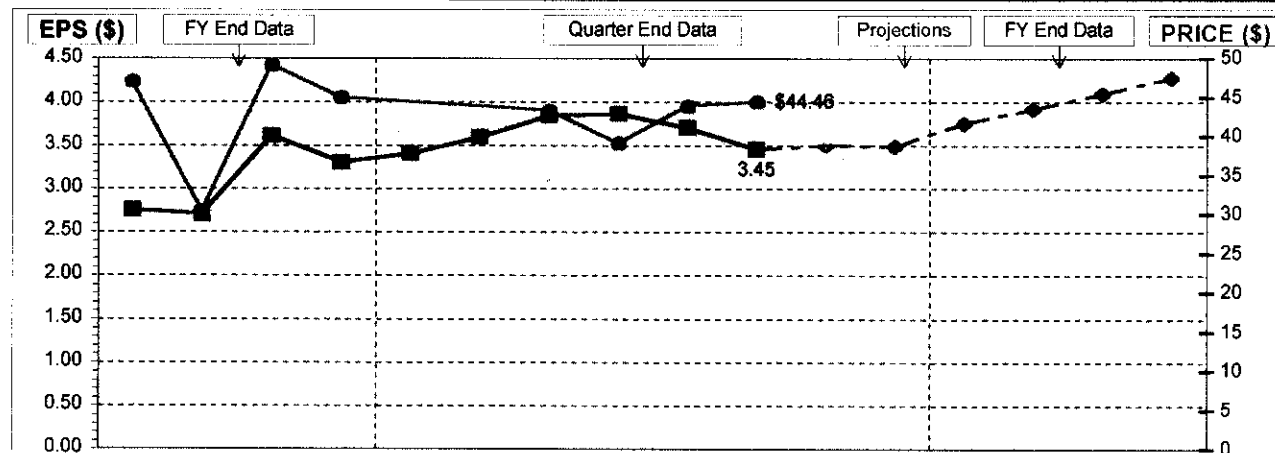
Shares Out	243.4 MM
Institutions	54.60%
Insiders	0.70%

#### EPS, P/E and Growth Rates

FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act	3.81	11.4	15%
12/03 Est	3.56	12.1	-7%
12/04 Est	3.75	11.5	5%
Last 5Yr			8%
Next 3-5Yr (Est)			4%

#### Other Key Measures

	Current	5-Year Avg
P/E (12 Mo)	12.5	13.4
Rel P/E	52%	
Net Margin	10%	9.6%
ROE	11.6%	13.2%
LT Debt/Cap	58%	53%



UTIL-ELEC PWR		Industry Comparables						Impl				
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
PROGRESS ENERGY		-1%	12.5	4%	1.4	1.2	5.3	0.77	5.2%	9.6%	12%	58%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

Latest Splits: 02/01/93 2.000

Ex-Div. Date: 10/08/03



Item 16. page 12

# CONSTELL'N EGY GP. NYSE-CEG

RECENT PRICE

35.77

PE RATIO

12.9

(Trailing 15.5 Mediar 14.0)

RELATIVE P/E RATIO

0.74

DIV YLD

3.0%

VALUE LINE

159

TIMELINESS 3  
SAFETY 2  
TECHNICAL 3  
BETA 1.5

High 24.4  
Low 19.9

27.5  
26.4

29.5  
20.5

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20.5

27.5  
20.5

2006-08 PROJECTIONS  
Price 55  
Gain (+55%)  
Return 14%  
Low 40

Ann'l Total

High 55

Low 40

Gain (+55%)

Return 14%

Low 40

Gain (+55%)

Return 14%

Low 40

Gain (+55%)

Return 14%

Low 40

Gain (+55%)

Insider Decisions  
ORD J F M A M J  
to Buy 0 0 0 0 0 0  
to Sell 0 0 0 0 0 0

ORD J F M A M J

to Buy 0 0 0 0 0 0

to Sell 0 0 0 0 0 0

ORD J F M A M J

to Buy 0 0 0 0 0 0

to Sell 0 0 0 0 0 0

ORD J F M A M J

to Buy 0 0 0 0 0 0

to Sell 0 0 0 0 0 0

ORD J F M A M J

to Buy 0 0 0 0 0 0

to Sell 0 0 0 0 0 0

ORD J F M A M J

Institutional Decisions  
to Buy 116  
to Sell 126  
Net Buy 11370

to Buy 116

to Sell 126

Net Buy 11370

to Buy 116

to Sell 126

Net Buy 11370

to Buy 116

to Sell 126

Net Buy 11370

to Buy 116

to Sell 126

Net Buy 11370

to Buy 116

1987	1988	1989	1990
16.28	15.67	16.63	17.81
3.84	3.98	3.45	2.91
2.31	2.31	2.03	1.40
1.25	1.32	1.39	1.40
2.74	3.06	4.05	4.42
14.83	15.85	16.60	17.10
118.37	118.95	120.52	121.21
9.1	9.1	10.4	13.7
.61	.76	.79	1.02
6.0%	6.3%	6.6%	7.3%

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
16.28	15.67	16.63	17.81	19.41	17.33	18.27	18.86	19.89	21.35	22.40	22.50	25.32	25.77	24.00	28.53	57.15	59.55	59.55	59.55	59.55	59.55
3.84	3.98	3.45	2.91	3.08	3.10	3.45	3.93	4.59	4.45	4.86	4.93	5.57	5.78	5.02	5.50	5.80	6.25	6.25	6.25	6.25	6.25
2.31	2.31	2.03	1.40	1.52	1.63	1.85	1.93	2.02	1.35	1.97	2.06	2.18	2.30	2.29	2.29	2.70	2.95	2.95	2.95	2.95	2.95
1.25	1.32	1.39	1.40	1.40	1.43	1.47	1.51	1.55	1.59	1.63	1.67	1.68	1.68	1.48	1.48	1.04	1.12	1.12	1.12	1.12	1.12
2.74	3.06	4.05	4.42	3.60	2.71	3.27	3.27	2.48	2.44	2.53	2.27	2.92	7.17	8.05	5.05	4.46	3.95	3.95	3.95	3.95	3.95
14.73	15.85	16.60	17.10	17.00	17.63	17.94	18.42	19.07	19.35	19.44	19.98	20.01	20.95	23.48	23.43	24.20	25.85	25.85	25.85	25.85	25.85
118.37	118.95	120.52	121.21	126.69	143.78	146.03	147.53	147.53	147.57	147.67	149.25	149.56	150.53	163.71	164.84	166.25	167.50	167.50	167.50	167.50	167.50
9.1	9.1	10.4	13.7	13.2	13.6	13.8	11.8	12.4	14.7	14.0	15.3	13.2	15.8	16.4	12.1	10.8	10.8	10.8	10.8	10.8	10.8
6.1	7.6	7.9	1.02	8.4	8.2	8.2	7.7	8.3	9.2	8.1	8.0	7.5	1.03	8.4	6.6	6.6	6.6	6.6	6.6	6.6	6.6
6.0%	6.3%	6.6%	7.3%	7.0%	6.5%	5.8%	6.6%	6.2%	5.9%	5.9%	5.3%	5.8%	4.6%	1.3%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
16.28	15.67	16.63	17.81	19.41	17.33	18.27	18.86	19.89	21.35	22.40	22.50	25.32	25.77	24.00	28.53	57.15	59.55	59.55	59.55	59.55	59.55
3.84	3.98	3.45	2.91	3.08	3.10	3.45	3.93	4.59	4.45	4.86	4.93	5.57	5.78	5.02	5.50	5.80	6.25	6.25	6.25	6.25	6.25
2.31	2.31	2.03	1.40	1.52	1.63	1.85	1.93	2.02	1.35	1.97	2.06	2.18	2.30	2.29	2.29	2.70	2.95	2.95	2.95	2.95	2.95
1.25	1.32	1.39	1.40	1.40	1.43	1.47	1.51	1.55	1.59	1.63	1.67	1.68	1.68	1.48	1.48	1.04	1.12	1.12	1.12	1.12	1.12
2.74	3.06	4.05	4.42	3.60	2.71	3.27	3.27	2.48	2.44	2.53	2.27	2.92	7.17	8.05	5.05	4.46	3.95	3.95	3.95	3.95	3.95
14.73	15.85	16.60	17.10	17.00	17.63	17.94	18.42	19.07	19.35	19.44	19.98	20.01	20.95	23.48	23.43	24.20	25.85	25.85	25.85	25.85	25.85
118.37	118.95	120.52	121.21	126.69	143.78	146.03	147.53	147.53	147.57	147.67	149.25	149.56	150.53	163.71	164.84	166.25	167.50	167.50	167.50	167.50	167.50
9.1	9.1	10.4	13.7	13.2	13.6	13.8	11.8	12.4	14.7	14.0	15.3	13.2	15.8	16.4	12.1	10.8	10.8	10.8	10.8	10.8	10.8
6.1	7.6	7.9	1.02	8.4	8.2	8.2	7.7	8.3	9.2	8.1	8.0	7.5	1.03	8.4	6.6	6.6	6.6	6.6	6.6	6.6	6.6
6.0%	6.3%	6.6%	7.3%	7.0%	6.5%	5.8%	6.6%	6.2%	5.9%	5.9%	5.3%	5.8%	4.6%	1.3%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
16.28	15.67	16.63	17.81	19.41	17.33	18.27	18.86	19.89	21.35	22.40	22.50	25.32	25.77	24.00	28.53	57.15	59.55	59.55	59.55	59.55	59.55
3.84	3.98	3.45	2.91	3.08	3.10	3.45	3.93	4.59	4.45	4.86	4.93	5.57	5.78	5.02	5.50	5.80	6.25	6.25	6.25	6.25	6.25
2.31	2.31	2.03	1.40	1.52	1.63	1.85	1.93	2.02	1.35	1.97	2.06	2.18	2.30	2.29	2.29	2.70	2.95	2.95	2.95	2.95	2.95
1.25	1.32	1.39	1.40	1.40	1.43	1.47	1.51	1.55	1.59	1.63	1.67	1.68	1.68	1.48	1.48	1.04	1.12	1.12	1.12	1.12	1.12
2.74	3.06	4.05	4.42	3.60	2.71	3.27	3.27	2.48	2.44	2.53	2.27	2.92	7.17	8.05	5.05	4.46	3.95	3.95	3.95	3.95	3.95
14.73	15.85	16.60	17.10	17.00	17.63	17.94	18.42	19.07	19.35	19.44	19.98	20.01	20.95	23.48	23.43	24.20	25.85	25.85	25.85	25.85	25.85
118.37	118.95	120.52	121.21	126.69	143.78	146.03	147.53	147.53	147.57	147.67	149.25	149.56	150.53	163.71	164.84	166.25	167.50	167.50	167.50	167.50	167.50
9.1	9.1	10.4	13.7	13.2	13.6	13.8	11.8	12.4	14.7	14.0	15.3	13.2	15.8	16.4	12.1	10.8	10.8	10.8	10.8	10.8	10.8
6.1	7.6	7.9	1.02	8.4	8.2	8.2	7.7	8.3	9.2	8.1	8.0	7.5	1.03	8.4	6.6	6.6	6.6	6.6	6.6	6.6	6.6
6.0%	6.3%	6.6%	7.3%	7.0%	6.5%	5.8%	6.6%	6.2%	5.9%	5.9%	5.3%	5.8%	4.6%	1.3%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%

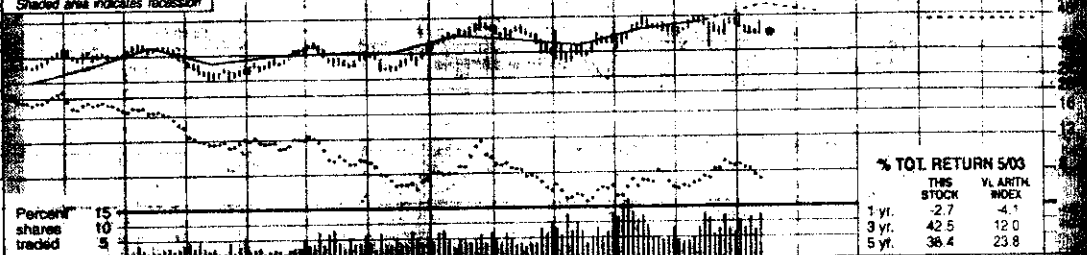
1987	1988	1
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# DTE ENERGY CO. NYSE-DTE

RECENT PRICE **39.50** P/E RATIO **13.9** (Trailing: 12.2 Median: 11.0) RELATIVE P/E RATIO **0.83** DIV'D YLD **5.2%** VALUE LINE **706**

TIMELINESS		4	Lowered 5/16/03	High:	35.3	37.1	30.3	34.9	37.3	34.8	49.3	44.7	41.3	47.1	47.7	49.5	Target Price	Range	
FETY		3	Lowered 10/5/01	Low:	30.3	29.9	24.3	25.8	27.6	26.1	33.4	31.1	28.4	33.1	33.1	38.5	2006	2007	2008
J-RICAL		3	Lowered 2/7/03	LEGENDS															
BETA 80 (1.00 = Market)				1.01 = Dividends p sh divided by Interest Rate Relative Price Strength															
				Options: Yes															

**LEGENDS**  
1.01 = Dividends p sh  
divided by Interest Rate  
Relative Price Strength  
Options: Yes  
Shaded area indicates recession



1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	VALUE LINE PUB. INC.	06
19.47	21.13	22.89	22.29	21.41	24.20	24.18	24.29	25.05	25.22	28.16	32.00	39.24	48.71	48.30	43.89	45.15	45.15	Revenues per sh	
4.87	4.89	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	"Cash Flow" per sh	
3.25	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	Earnings per sh	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Div'd Dec'd per sh	
4.88	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	Cap'l Spending per sh	
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	Book Value per sh	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Common Shs Outst'g	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Ann 1 P/E Ratio	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Relative P/E Ratio	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Div'd Yield	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Income (Small)	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Profit (Small)	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Income Tax Rate	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	AFUDC % to Net Profit	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Long-Term Debt Ratio	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Common Equity Ratio	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Total Capital (Small)	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Net Plant (Small)	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Return on Total Cap'l	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Return on Shr. Equity	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Return on Com Equity	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	Retained to Com Eq	
1.88	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	All Divs to Net Prof	

**MARKET CAP: \$6.6 billion (Large Cap)**

**ELECTRIC OPERATING STATISTICS**

	2000	2001	2002
% Change Field Sales (MWh)	+1.1	-4.1	+7.7
Ac. Indust. Use (MWh)	16090	14429	13589
Ac. Indust. Rev. per MWh	5.27	5.36	5.15
Comdty at Peak (MW)	11053	11053	11080
Peak Load, Summer (MW)	10819	11860	11308
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	+1.0	+7.7	+1.6

ANNUAL RATES	2000	2001	2002
Revenues	6.0%	11.3%	3.0%
"Cash Flow"	2.0%	2.0%	4.0%
Earnings	1.5%	1.5%	1.5%
Dividends	1.5%	1.5%	1.5%
Book Value	1.5%	1.5%	1.5%

Cal-ender	Mar. 31	Jun. 30	Sep. 30	Dec. 31	Full Year
2000	1.81	1.76	1.73	1.97	3.27
2001	1.95	1.60	1.38	1.34	2.15
2002	1.24	1.42	1.96	1.21	3.83
2003	1.64	1.48	1.61	1.20	2.85
2004	1.25	1.45	1.65	1.25	3.60

Cal-ender	Mar. 31	Jun. 30	Sep. 30	Dec. 31	Full Year
2000	1.81	1.76	1.73	1.97	3.27
2001	1.95	1.60	1.38	1.34	2.15
2002	1.24	1.42	1.96	1.21	3.83
2003	1.64	1.48	1.61	1.20	2.85
2004	1.25	1.45	1.65	1.25	3.60

QUARTERLY DIVIDENDS PAID	Mar. 31	Jun. 30	Sep. 30	Dec. 31	Full Year
1999	0.15	0.15	0.15	0.15	0.60
2000	0.15	0.15	0.15	0.15	0.60
2001	0.15	0.15	0.15	0.15	0.60
2002	0.15	0.15	0.15	0.15	0.60
2003	0.15	0.15	0.15	0.15	0.60

**BUSINESS:** DTE Energy Company is a holding company for The Detroit Edison Company, which supplies electricity in Detroit and a 7,600-square-mile area in southeastern Michigan and Michigan Consolidated Gas (MichCon). Customers: 2.1 million electric; 1.3 million gas. Acqd MichCon Energy 501. Has various nuclear ops. Owns 52% of Prog Power. Electric rev. breakdown: 100% nuclear; 5% coal; 17% ind'l; 17% other, 11%. Generating sources: '02 coal, 54%; nuclear, 16%; other 3%; purchased, 17%. Fuel costs: 31% of revs. '02 reported deprec. rates: 3.4% elec, 3.6% gas. Has 11,100 employees, 109,000 com. stockholders. Chairman, Pres. & CEO, Anthony F. Earley, Jr. Inc. MI. Address: 2000 Second Ave., Detroit, MI 48226-1279. Tel: 313-235-4000. Internet: www.dteenergy.com.

**We have cut our earnings estimates for DTE Energy.** March-quarter profits were well below our expectations, due in part to a \$0.10-a-share reserve for possibly uncollectible gas costs and two small, unusual charges that took \$0.14 off the bottom line. We include these three items in our presentation. DTE's goal of \$3.76-\$3.90 a share excludes them, though that figure was set before a problem with the company's tax-deferred nuclear operation arose. DTE had previously estimated the private letter ruling from the IRS that it needs before it can sell some projects, as was its intent all along. It will curtail production at the facilities, which will reduce earnings by \$0.05-\$0.07 a share each month. The synfuels problem certainly makes earnings much tougher to estimate than usual. We have slashed our 2003 share-net estimate from \$3.95 to \$2.85, and our 2004 figure is now \$3.60, down from \$4.15 previously. Detroit Edison has filed a rate case. The utility's last base rate increase was 10 years ago. Certain costs, such as those for pensions and healthcare, are up sharply. Detroit Edison seeks a rate hike of \$416 million (8% based on an 11.5% return on

equity, a \$109 million, five-year surcharge to recover regulatory assets, including costs associated with customer choice in the state and environmental capital expenditures; a \$274 interim rate hike that would take effect at the start of 2004; and restoration of a fuel adjustment mechanism. The final order is due in the first half of 2004. Any rate changes would take effect for small commercial/industrial customers and residential customers only after rate caps for those users expire at the end of 2004 and 2005, respectively. MichCon Gas will also file a rate request, probably by the end of the third quarter. Because MichCon is earning only a single-digit return on equity, it appears to have a strong case for an increase. **Untimely DTE stock has lagged most utility issues lately.** As a result, its yield is now about a percentage point above the industry average. That ought to provide reasonable compensation for investors to assume the risks associated with the synfuels business and the utilities rate cases. Total return potential to 2006-2008 is above average for the industry. *Paul E. DeBruin, CFA* *July 4, 2003*

Adjusted EPS: Excl. nonrecurring gains. Values: '96 (22c), '96 (67c), '01 (2c), '03 (1c) gain on disc ops. '03 (44c), '04 (EPS don't) due to change in shares. Next earnings report: 2003 Value Line Publishing Inc. All rights reserved. Factbook is published monthly and is provided without warranty. PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. This publication is strictly for subscribers' own use. No part may be reproduced, stored, or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without prior written permission from Value Line Publishing Inc.

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*Item 16, page 14*







RECENT PRICE	30.75	P/E RATIO	17.1 (Trailing: 19.5) Median: 15.0	RELATIVE P/E RATIO	1.02	DIV'D YLD	4.4%	VALUE LINE	710
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TIMELINESS	5	Lowered 6/20/03
VECTY	1	New 1/3/03
CHINICAL	3	Lowered 7/14/03

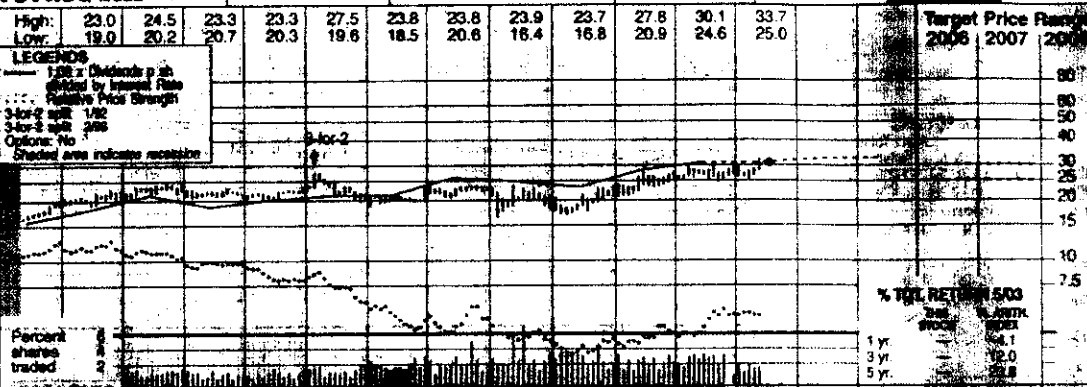
BETA .55 (1.00 = Market)

### 2006-08 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	100%	100%
Low	26	100%	100%

[illegible]

	30000	40000	100000
to Buy	23	31	29
to Sell	29	16	26
Net-1000	3755	4118	3830

[illegible]

	2000	2001	2002
% Change Retail Sales (KWH)	+2.1	+2.5	-1.6
% Avg. Indust. Use (MWH)	4203	4252	4224
% Avg. Indust. Plows per KWH sq	3.87	4.10	4.40
Capacity at Peak (mw)	703	708	783
Peak Load, Summer (mw)	604	654	699
Normal Load Factor (%)	50.1	50.7	50.1
% Change Customers (avg.)	+1.9	+2.5	+1.0

ANNUAL RATES	Past 12 Mo.	Past 12 Mo.	1970-72
of change (est.)			
Revenues	3.0%	4.0%	5%
"Cash Flow"	3.0%	4.0%	5%
Earnings	1.8%	2.0%	2.5%
Dividends	1.5%	1.5%	1.5%
Book Value	1.5%	1.5%	1.5%

**BUSINESS:** MGE Energy Inc. is a holding company for Madison Gas and Electric, which provides electric service to 130,000 customers in a 250-square-mile area of Dane County and gas service to 128,000 customers in 1,375 square miles in seven counties in Wisconsin. Electric revenue breakdown: 72% residential, 36% commercial, 48% industrial, 5% public utilities, 7% other, 3%.

Generating sources: '02: coal, 56%; purchased power, 39%; gas, 4%; other, 1%. Fuel costs: 43% of revenues. '02 reported capacity: electric, 3.4%; gas, 3.3%. Has 693 employees, 18,000 stockholders. Chairman, President & CEO: Gary J. Wolter, Inc.; [www.mge.com](http://www.mge.com). Address: 133 South Blair St., P.O. Box 1231, Madison, WI 53701-1231. Tel.: 608-252-7000. Internet [www.mge.com](http://www.mge.com).

**Higher fuel costs are hurting MGE Energy's results.** Revenues within the company's electric utility operations increased 10.4% year over year, in the March quarter, reflecting rate increases as well as higher electricity consumption per customer. That said, the cost of fuel needed to generate electricity jumped 74.8% while the total price paid for purchased power increased 69.2%. The company's reliance on natural gas-fired power plants is a factor when the price of that fuel has spiked, it's largely to blame. The coal-fired Columbia Energy Center plant has been out of service more often so far this year. In addition, MGE's generation mix includes more electricity bought from gas-fired plants since two new purchased power contracts took effect in May 2002. Going forward, MGE gets the full benefit from recent rate hikes, which should help offset the higher fuel costs; effective March 1, the Public Service Commission of Wisconsin granted MGE a 9.1% increase in electric rates and a 5.4% increase in gas rates. Still, we're lowering our 2003 earnings estimate to reflect higher fuel costs. Our target is now \$1.50 a share, down

from \$1.95 in early April. We look for modest profit growth out to 2006-2008. MGE's south-central Wisconsin service area boasts favorable demographics, which should support decent long-term operating performance; economic growth there is consistently higher than the national average. To keep pace with growing customer demand, MGE plans to add 300 megawatts of electric generating capacity over the next decade. A new cogeneration facility, capable of producing 150 megawatts of power, is planned. Assuming regulatory approval, it should be up and running on the University of Wisconsin campus by 2005.

MGE shares are ranked 5 (Lowest) for relative year-ahead price performance. They've had a strong run up in price over the past several years and subsequently carry one of the highest price-earnings ratio of any utility equity. MGE's yield, at 4.4%, is relatively attractive. Still, we think investors stressing total return potential to 2006-2008 will find better opportunities elsewhere.

Nils C. Van Liew July 4, 2003

<p>Next nonrecurring loss '96 42¢ Next earnings report due mid-Aug (B) Dividends historically paid 1st-3rd March, June, September, December • Dividend reinvestment plan</p>	<p>available (C) Incl. deferred charges in '96 30% Regulatory Climate Above Average \$27.5 mill \$159/sh (D) In millions (E) Not allowed on common equity in '02 12.2% earned on average common equity '02</p>
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Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	20
Earnings Predictability	70

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# PROGRESS ENERGY

<b>TIME</b> 4	<b>SAFETY</b> 2	<b>INCL</b> 4	<b>2006-06 PROJECTIONS</b>	<b>High</b> 28.1	<b>Low</b> 25.1	<b>2000</b> 34.8	<b>2001</b> 32.8	<b>2002</b> 42.7	<b>2003</b> 40.6	<b>2004</b> 47.9	<b>2005</b> 48.4	<b>2006</b> 49.3	<b>2007</b> 52.7	<b>2008</b> 48.0	<b>Target Price</b> 2006 2007 2008
<b>25</b> (1.00 = Month)															
<b>Price</b> 80	<b>Gain</b> (+50%)	<b>15%</b>													
<b>High</b> 80	<b>Low</b> 45	<b>10%</b>													
<b>Insider Decisions</b>															
<b>to Buy</b> 2 0 1 1 0 1 1 0 0 0															
<b>to Sell</b> 0 0 0 0 0 0 0 0 0 0															
<b>Institutional Decisions</b>															
<b>to Buy</b> 188	<b>to Sell</b> 202	<b>164</b>													
<b>to Buy</b> 150	<b>to Sell</b> 127	<b>135</b>													
<b>High</b> 123810	<b>Low</b> 129768	<b>134008</b>													

Progress Energy was formed on November 30, 2000 through the merger of CP&L Energy and Florida Progress. Florida Progress common shareholders exchanged each share held for \$54 in cash and/or CP&L common stock. They also received one Contingent Value Obligation for each share of Florida Progress stock, entitling them to payments in the event that four separate fuel plants achieve certain economic goals from 2001 to 2007. Data prior to November 30, 2000 is for CP&L only and is not comparable to Progress Energy data.	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000	3001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	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	6	0.65	0.66	0.64	0.01	--
Quarter Ending 03/04	2	0.76	0.76	0.76	0.00	--
Year Ending 12/03	15	2.60	2.65	2.57	0.02	13.91
Year Ending 12/04	15	2.76	2.85	2.70	0.03	13.15
LT Growth Rate	9	4.11	5.00	2.00	0.93	--

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## EPS Estimates

### Earnings Per Share Estimates In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 09/03	6	0.54	0.66	0.46	0.07	--
Quarter Ending 12/03	1	1.15	1.15	1.15	--	--
Year Ending 12/03	10	3.21	3.84	3.05	0.23	11.53
Year Ending 12/04	10	3.54	3.93	3.20	0.27	10.45
LT Growth Rate	7	5.14	8.00	1.00	2.48	--

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In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	11	0.74	0.79	0.70	0.03	--
Quarter Ending 03/04	2	0.94	0.94	0.94	0.00	--
Year Ending 12/03	20	4.88	4.94	4.80	0.03	13.16
Year Ending 12/04	19	5.10	5.16	4.98	0.05	12.59
LT Growth Rate	14	4.62	7.00	-3.30	2.51	--

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## Earnings Per Share Estimates

In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	14	0.16	0.19	0.15	0.01	--
Quarter Ending 03/04	5	0.41	0.50	0.35	0.06	--
Year Ending 12/03	21	1.90	1.95	1.85	0.02	--
Year Ending 12/04	20	1.97	2.01	1.93	0.03	--
LT Growth Rate	15	4.41	6.00	-1.90	1.86	--

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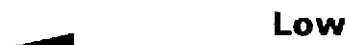
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### Earnings Per Share Estimates In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	9	0.59	0.65	0.55	0.03	--
Quarter Ending 03/04	2	0.42	0.45	0.39	0.04	--
Year Ending 12/03	13	2.78	2.90	2.68	0.05	13.34
Year Ending 12/04	13	3.01	3.15	2.90	0.07	12.31
LT Growth Rate	7	6.57	10.00	4.00	1.99	--

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## Earnings Per Share Estimates

In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	3	0.20	0.21	0.18	0.02	--
Year Ending 12/03	4	1.40	1.51	1.35	0.08	15.33
Year Ending 12/04	4	1.41	1.50	1.30	0.08	15.28
LT Growth Rate	2	6.50	10.00	3.00	4.95	--

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### Earnings Per Share Estimates In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	2	0.38	0.40	0.36	0.03	--
Quarter Ending 03/04	1	0.55	0.55	0.55	--	--
Year Ending 12/03	4	1.96	2.00	1.90	0.05	--
Year Ending 12/04	4	2.12	2.20	2.00	0.10	--
LT Growth Rate	1	5.00	5.00	5.00	--	--

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#### Earnings Per Share Estimates

In US Dollar

	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.	Proj- P/E
Quarter Ending 12/03	10	0.76	0.81	0.70	0.03	--
Quarter Ending 03/04	2	0.78	0.78	0.78	0.00	--
Year Ending 12/03	17	3.54	3.70	3.49	0.06	12.15
Year Ending 12/04	16	3.73	3.87	3.65	0.07	11.52
LT Growth Rate	10	3.65	5.00	1.00	1.25	--

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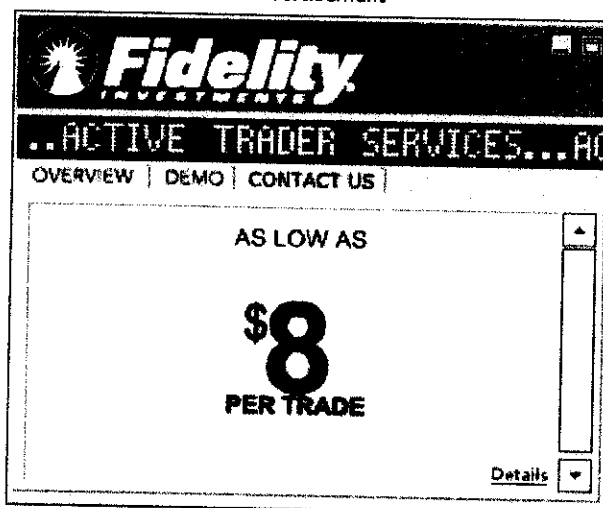
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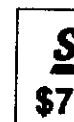
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	# of Ests.	Mean Est.	High Est.	Low Est.	Std. Dev.
Quarter Ending 06/99	12	0.38	0.38	0.37	0.01
Quarter Ending 09/99	12	0.38	0.40	0.37	0.01
Year Ending 12/99	23	1.41	1.45	1.39	0.02
Year Ending 12/00	16	1.58	1.61	1.52	0.02
LT Growth Rate	18	13.58	22.70	10.00	2.98

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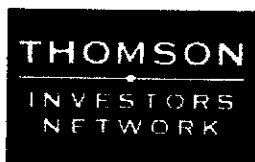
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**CINERGY CORP. (CIN)**

Industry: Electric

Last Updated: 25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	0.76	6	23-Oct-2003	0.79
Dec/2003 FY	2.64	15	NA	2.68

**P/E Ratio: 13.6**
**Consensus Recommendation: 2.6**
**Consensus Future 5-yr Growth Rate: 4.0%**

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### First Call Consensus Estimate Snapshot

#### DTE ENERGY CO (DTE)

Industry: Electric

**Last Updated:** 25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	0.90	1	28-Oct-2003 (week of)	0.96
Dec/2003 FY	3.24	9	NA	3.83

P/E Ratio: 11.1

Consensus Recommendation: 2.9

Consensus Future 5-yr Growth Rate: 5.5%

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First Call Snapshot



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**FPL GROUP (FPL)**

Industry: Electric

**Last  
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Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	1.83	8	23-Oct-2003	1.79
Dec/2003 FY	4.88	19	NA	4.80

P/E Ratio: 12.6

Consensus Recommendation: 2.3

Consensus Future 5-yr Growth Rate: 5.0%

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### First Call Consensus Estimate Snapshot

SOUTHERN CO. (SO)

Industry: Electric

**Last  
Updated:**

25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	0.77	8	20-Oct-2003 (week of)	0.84
Dec/2003 FY	1.85	20	NA	1.86

P/E Ratio: 15.5

Consensus Recommendation: 3.2

Consensus Future 5-yr Growth Rate: 5.0%

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CEG

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### First Call Consensus Estimate Snapshot

#### CONSTELLATION ENERGY GROUP (CEG)

Industry: Electric

Last Updated: 25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	1.15	6	31-Oct-2003 (week of)	1.07
Dec/2003 FY	2.75	14	NA	2.52

P/E Ratio: 13.0

Consensus Recommendation: 2.6

Consensus Future 5-yr Growth Rate: 6.0%

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EDE

First Call Snapshot



### First Call Consensus Estimate Snapshot

#### EMPIRE DISTRICT ELECTRIC CO. (EDE)

Industry: Electric

**Last  
Updated:**

25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	0.89	3	21-Oct-2003 (week of)	0.82
Dec/2003 FY	1.47	4	NA	1.19

P/E Ratio: 14.9

Consensus Recommendation: 2.7

Consensus Future 5-yr Growth Rate: 3.0%

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PNM

First Call Snapshot



### First Call Consensus Estimate Snapshot

#### PNM RESOURCES INC (PNM)

Industry: Electric

Last Updated: 25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	0.65	1	29-Oct-2003 (week of)	0.59
Dec/2003 FY	1.97	4	NA	1.81

P/E Ratio: 14.2

Consensus Recommendation: 3.0

Consensus Future 5-yr Growth Rate: 5.0%

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PGN

First Call Snapshot



### First Call Consensus Estimate Snapshot

#### PROGRESS ENERGY INC. (PGN)

Industry: Electric

**Last Updated:** 25-SEP-2003

Current Period	Mean EPS	# of Brokers	Report Date	Year Ago EPS
Sept/2003 Q	1.45	4	20-Oct-2003 (week of)	1.53
Dec/2003 FY	3.64	16	NA	3.81

P/E Ratio: 12.1

Consensus Recommendation: 2.6

Consensus Future 5-yr Growth Rate: 4.0%

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Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

17. Explain how the closing stock prices shown on Schedules 36 and 37 are "adjusted."

Answer:

The closing stock prices are adjusted for stock splits and stock dividends, so that it is a consistent series. For example suppose XYZ Company's stock had a 2 for 1 stock split effective June 15. On June 15 there would be twice as many shares outstanding. Assume that the prices on June 13, 14, 15, and 16 were \$30.50, \$30.80, \$15.60, and \$15.90 on those dates. The adjustment for June 13 would be  $\$30.50/2$ ; for June 14 it would be  $\$30.80/2$ ; on June 15 and 16 there would be no adjustment. The adjusted data series would be \$15.25, \$15.40, \$15.60, and \$15.90.





Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

18. In reference to Schedules 39-40, provide a computer disc showing all data and calculations underlying the calculation of internal rate of return. (All formulas should be reflected on this computer disc, including those for the calculation of the present value of the perpetuity and the calculation of the internal rate of return.)

Answer:

Enclosed is a computer disc showing the calculation for Schedule 39 and Schedule 40. The iterations for determining K were done by hand.



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

19. In reference to Schedule 43, provide the relevant pages from each source used in deriving the forecasts and projections in items 2-7 on that schedule.

Answer:

The requested source documents are attached.

H.15 DAILY UPDATE: WEB RELEASE ONLY  
SELECTED INTEREST RATESFor immediate release  
October 31, 2003

Yields in percent per annum

Instruments	2003 Oct 27	2003 Oct 28	2003 Oct 29	2003 Oct 30
Federal funds (effective) 1 2 3	1.03	0.98	0.97	1.02
Commercial paper 3 4 5 6				
Nonfinancial	1.02	1.02	1.03	1.02
1-month	1.03	1.02	1.03	1.02
2-month	1.09	1.08	1.05	1.05
3-month				
Financial	1.03	1.03	1.03	1.03
1-month	1.05	1.03	1.04	1.04
2-month	1.06	1.07	1.06	1.07
3-month				
CDs (secondary market) 3 7	1.05	1.06	1.06	1.06
1-month	1.10	1.11	1.10	1.10
3-month	1.15	1.17	1.14	1.15
6-month				
Eurodollar deposits (London) 3 8	1.05	1.05	1.04	1.05
1-month	1.09	1.10	1.10	1.10
3-month	1.14	1.15	1.13	1.15
6-month	4.00	4.00	4.00	4.00
Bank prime loan 2 3 9	2.00	2.00	2.00	2.00
Discount window primary credit 2 10				
U.S. government securities				
Treasury bills (secondary market) 3 4	0.93	0.96	0.96	0.95
4-week	0.96	0.94	0.94	0.94
3-month	1.03	1.01	1.02	1.02
6-month				
Treasury constant maturities 11	0.95	0.98	0.98	0.97
1-month	0.98	0.96	0.96	0.96
3-month	1.05	1.03	1.04	1.04
6-month	1.31	1.25	1.29	1.32
1-year	1.83	1.71	1.79	1.86
2-year	2.35	2.23	2.32	2.39
3-year	3.21	3.11	3.20	3.29
5-year	3.75	3.67	3.76	3.83
7-year	4.30	4.23	4.31	4.36
10-year	5.19	5.14	5.21	5.25
20-year				
Treasury long-term average (25 years and above) 12 13	5.23	5.19	5.25	5.28
Interest rate swaps 14	1.48	1.50	1.44	1.49
1-year	2.15	2.22	2.10	2.21
2-year	2.75	2.81	2.70	2.82
3-year	3.22	3.27	3.17	3.32
4-year	3.60	3.65	3.56	3.72
5-year	4.16	4.19	4.12	4.27
7-year	4.68	4.70	4.66	4.79
10-year	5.42	5.43	5.42	5.52
30-year				
Corporate bonds				
Moody's seasoned	5.68	5.63	5.70	5.74
Aaa 15	6.69	6.64	6.70	6.72
Baa				4.88
State & local bonds 16				
Conventional mortgages 17				
-----				

**The Budget and Economic Outlook: An Update**  
 August 2003  
 Section 7 of 8

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## APPENDIX

## C

## CBO's Economic Projections for 2003 Through 2013

Year-by-year economic projections for 2003 through 2013 are shown in the accompanying tables (by calendar year in Table C-1 and by fiscal year in Table C-2). The Congressional Budget Office did not try to explicitly incorporate cyclical recessions and recoveries into its projections for years after 2004. Instead, the projected values shown here for 2005 through 2013 reflect CBO's assessment of average values for that period—which take into account potential ups and downs in the business cycle.

Table C-1.

### CBO's Year-by-Year Forecast and Projections for Calendar Years 2003 Through 2013

	Actual	Forecast					Projected					
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Nominal GDP (Billions of dollars)	10,446	10,836	11,406	12,025	12,706	13,391	14,098	14,823	15,559	16,312	17,105	17,943
Nominal GDP (Percentage change)	3.6	3.7	5.3	5.4	5.7	5.4	5.3	5.1	5.0	4.8	4.9	4.9
Real GDP (Percentage change)	2.4	2.2	3.8	3.5	3.3	3.2	3.0	2.9	2.7	2.6	2.6	2.6
GDP Price Index (Percentage change)	1.1	1.5	1.4	1.8	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2
Consumer Price Index <sup>a</sup> (Percentage change)	1.6	2.3	1.9	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Employment Cost Index <sup>b</sup> (Percentage change)	3.3	3.0	3.2	3.2	3.2	3.3	3.4	3.4	3.4	3.4	3.4	3.4
Unemployment Rate (Percent)	5.8	6.2	6.2	5.7	5.4	5.3	5.2	5.2	5.2	5.2	5.2	5.2
Three-Month Treasury Bill Rate (Percent)	1.6	1.0	1.7	3.2	4.0	4.7	4.9	4.9	4.9	4.9	4.9	4.9
Ten-Year Treasury Note Rate (Percent)	4.6	4.0	4.6	5.5	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8

 $\bar{x} = 5.725$ 

Item 19, page 3

**Table 4. ECONOMIC ASSUMPTIONS <sup>1</sup>**  
**(Calendar years; dollar amounts in billions)**

	2002 Actual	Projections					
		2003	2004	2005	2006	2007	2008
<b>Gross Domestic Product (GDP):</b>							
Levels, dollar amounts in billions:							
Current dollars	10,446	10,863	11,405	11,972	12,563	13,183	13,837
Real, chained (1996) dollars	9,440	9,661	10,018	10,378	10,733	11,079	11,427
Chained price index (1996 = 100), annual average	110.7	112.4	113.8	115.3	117.0	119.0	121.0
Percent change, fourth quarter over fourth quarter:							
Current dollars	4.3	4.4	5.1	4.9	4.9	5.0	4.9
Real, chained (1996) dollars	2.9	2.8	3.7	3.5	3.3	3.2	3.1
Chained price index (1996 = 100)	1.3	1.5	1.3	1.4	1.6	1.7	1.8
Percent change, year over year:							
Current dollars	3.6	4.0	5.0	5.0	4.9	4.9	5.0
Real, chained (1996) dollars	2.4	2.3	3.7	3.6	3.4	3.2	3.1
Chained price index (1996 = 100)	1.1	1.6	1.2	1.3	1.5	1.7	1.8
<b>Incomes, billions of current dollars:</b>							
Corporate profits before tax	665	708	671	1,151	1,142	1,135	1,154
Wages and salaries	5,004	5,162	5,438	5,740	6,060	6,373	6,689
Other taxable income <sup>2</sup>	2,411	2,479	2,615	2,662	2,706	2,767	2,851
<b>Consumer Price Index (all urban): <sup>3</sup></b>							
Level (1982-84 = 100), annual average	179.9	184.0	187.0	190.4	194.2	198.6	203.1
Percent change, fourth quarter over fourth quarter	2.2	1.9	1.8	1.9	2.1	2.3	2.3
Percent change, year over year	1.6	2.3	1.7	1.8	2.0	2.2	2.3
<b>Unemployment rate, civilian, percent:</b>							
Fourth quarter level	5.9	5.8	5.5	5.3	5.2	5.1	5.1
Annual average	5.8	5.9	5.6	5.4	5.2	5.1	5.1
<b>Federal pay raises, January, percent:</b>							
Military <sup>4</sup>	6.9	4.7	4	NA	NA	NA	NA
Civilian <sup>5</sup>	4.6	4.1	5	NA	NA	NA	NA
<b>Interest rates, percent:</b>							
91-day Treasury bills <sup>6</sup>	1.6	1.2	2.0	2.8	3.6	4.2	4.3
10-year Treasury notes	4.6	3.7	4.1	4.5	4.8	5.1	5.3

Avg

4.9

The economic assumptions for the Mid-Session Review, summarized in Table 4, differ from those used in the Administration's 2004 Budget in that they incorporate the fiscal, monetary, and economic developments discussed above.

During the second half of this year and into 2004 and 2005 growth is now projected to be somewhat stronger than anticipated in the February Budget, while inflation and interest rates are now projected to be lower. The unemployment rate is slightly higher in the near term, reflecting the higher current level.

# Value Line Forecast for the U.S. Economy

	ACTUAL					ESTIMATED				
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>GROSS DOMESTIC PRODUCT AND ITS COMPONENTS</b> (1996 CHAIN WEIGHTED \$) BILLIONS OF DOLLARS										
Final Sales	8432	8794	9121	9258	9424	9650	9996	10345	10708	11082
Total Consumption	5684	5965	6224	6377	6576	6760	7037	7269	7516	7779
Nonresidential Fixed Investment	1136	1228	1324	1255	1183	1202	1297	1414	1534	1657
Construction	262	259	276	271	226	213	219	241	260	278
Equipment & Software	875	976	1056	988	971	1009	1098	1197	1304	1409
Residential Fixed Investment	345	368	372	374	388	409	412	416	425	437
Exports	1002	1036	1137	1076	1059	1063	1144	1269	1393	1506
Imports	1224	1357	1536	1492	1547	1609	1725	1851	1962	2070
Federal Government	525	538	544	571	613	656	678	691	700	711
State & Local Governments	958	1002	1037	1069	1100	1100	1101	1118	1143	1163
Gross Domestic Product	8782	9274	9825	10082	10446	10855	11425	12083	12801	13573
Real GDP (1996 Chain Weighted \$)	8509	8859	9191	9215	9440	9661	10020	10390	10785	11195
<b>PRICES AND WAGES-ANNUAL RATES OF CHANGE</b>										
GDP Deflator	1.2	1.4	2.1	2.4	1.1	1.6	1.9	2.0	2.1	2.2
CPI-All Urban Consumers	1.5	2.2	3.4	2.8	1.6	1.9	2.0	2.1	2.3	2.5
PPI-Finished Goods	-0.9	1.8	3.7	2.0	-1.3	2.4	1.2	1.5	1.8	2.0
Employment Cost Index—Total Comp.	3.5	3.2	4.6	4.1	3.8	3.8	3.2	3.1	3.2	3.2
Productivity	2.6	2.4	2.9	1.1	4.8	3.5	2.6	2.5	2.5	2.5
<b>PRODUCTION AND OTHER KEY MEASURES</b>										
Industrial Prod. (% Change)	6.5	4.9	5.0	-4.1	-1.1	1.4	5.8	6.0	4.0	3.0
Factory Operating Rate (%)	81.9	81.4	81.4	75.6	73.7	73.5	76.5	78.0	79.0	80.0
Nonfarm Inven. Chg. (1996 Chain Weighted \$)	75.0	64.2	67.2	-63.2	4.1	13.0	54.8	60.0	55.0	50.0
Housing Starts (Mill. Units)	1.62	1.65	1.57	1.60	1.71	1.77	1.65	1.65	1.67	1.70
Total Light Vehicle Sales (Mill. Units)	15.5	16.9	17.4	17.1	16.8	16.4	17.0	17.5	17.7	17.8
Unit Car Sales (Mill. Units)	8.1	8.7	8.9	8.4	8.1	7.6	7.8	7.9	8.0	8.0
National Unemployment Rate (%)	4.5	4.2	4.0	4.8	5.8	6.1	6.0	5.7	5.6	5.5
Federal Budget Surplus (Unified, FY, \$Bill)	69.2	124.4	236.9	127.3	-157.8	-380.0	-400.0	-400.0	-300.0	-225.0
Price of Oil (\$Bbl., U.S. Refiners' Cost)	12.58	17.42	28.21	22.95	24.00	28.00	25.00	25.00	24.00	24.00
<b>MONEY AND INTEREST RATES</b>										
3-Month Treasury Bill Rate (%)	4.8	4.6	5.8	3.4	1.6	1.1	1.6	2.0	2.3	2.5
Federal Funds Rate (%)	5.4	5.0	6.2	3.9	1.7	1.1	1.4	2.0	2.5	3.0
10-Year Treasury Note Rate (%)	5.3	5.6	6.0	5.0	4.6	4.0	4.6	5.2	5.3	5.5
30-Year Treasury Bond Rate (%)	5.6	5.9	5.9	5.5	5.4	5.1	5.6	6.0	6.2	6.3
AAA Corporate Bond Rate (%)	6.5	7.0	7.6	7.1	6.5	5.9	6.3	6.5	6.6	6.8
Prime Rate (%)	8.4	8.0	9.2	6.9	4.7	4.1	4.4	5.0	5.5	6.0
<b>INCOMES</b>										
Personal Income (% Change)	7.0	4.9	8.0	3.3	2.8	4.3	5.3	5.2	5.3	5.5
Real Disp. Inc. (% Change)	5.4	2.6	4.8	1.8	4.3	4.6	3.8	2.5	2.7	3.0
Personal Savings Rate (%)	4.8	2.6	2.8	2.3	3.7	4.1	4.5	3.5	3.5	3.0
Pretax Corporate Profits (\$Bill)	721.1	762.0	782.0	670.0	665.0	748.0	829.0	929.0	1022.0	1103.0
Aftertax Corporate Profits (\$Bill)	482.3	514.0	523.0	471.0	452.0	495.0	547.0	613.0	674.0	728.0
Yr-to-Yr % Change	-13.1	6.6	1.7	-10.0	-4.0	9.5	10.5	12.0	10.0	8.0
<b>COMPOSITION OF REAL GDP-ANNUAL RATES OF CHANGE</b>										
Gross Domestic Product	4.3	4.1	3.8	0.3	2.4	2.3	3.7	3.7	3.8	3.8
Final Sales	4.2	4.3	3.7	1.5	1.8	2.4	3.6	3.5	3.5	3.5
Total Consumption	4.8	4.9	4.3	2.5	3.1	2.8	4.1	3.3	3.4	3.5
Nonresidential Fixed Investment	12.5	8.1	7.8	-5.2	-5.7	1.6	7.9	9.0	8.5	8.0
Construction	6.8	-1.3	6.5	-1.7	-16.4	-5.9	2.7	10.0	8.0	7.0
Equipment & Software	14.6	11.5	8.2	-6.4	-1.7	3.9	8.8	9.0	9.0	8.0
Residential Fixed Investment	8.0	6.8	1.1	0.3	3.4	5.4	0.8	1.0	2.0	3.0
Exports	2.1	3.4	9.7	-5.4	-3.6	0.4	7.6	10.9	9.8	8.1
Imports	11.8	10.8	13.2	-2.4	3.7	4.0	7.2	7.3	6.0	5.5
Federal Government	-0.8	2.4	1.2	4.8	7.1	6.9	3.4	2.0	1.3	1.5
State & Local Governments	3.4	4.6	3.5	3.1	2.4	0.0	0.1	1.5	2.3	1.7

2004-20  
Avg  
5.15%

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## Description of the latest issue - September 2003



Gail Fosler  
Chief Economist

## Global Growth

- Recovery is under way, with a likely 18–24 month life span
- Emerging markets will outpace advanced economies—but financial risks persist
- Latin America still lags rest of emerging markets
- Costs and capacity control are job number one for global business—still!

StraightTalk is a monthly publication from the Chief Economist of The Conference Board, provides economic research, objective analysis, and forecasts to help new economy business executives assess economic conditions impacting their markets. [Download a sample issue \(293 KB\)](#)

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## The U.S. Economic Forecast\*

October 2003

	2003			2004			2002	2003	2004
	II Q*	III Q	IV Q	I Q	II Q	III Q	ANNUAL	ANNUAL	ANNUAL
Real GDP	3.3	4.8	5.1	5.2	3.7	4.0	2.4	2.7	4.4
CPI Inflation	0.6	2.2	1.9	2.0	2.0	2.5	1.6	2.3	2.0
Real Consumer Spending	3.8	6.6	3.6	4.6	3.7	3.5	3.1	3.2	4.2
Unemployment Rate (%)	6.2	6.3	6.2	6.1	6.0	6.0	5.8	6.1	6.0
90 Day T-Bills (%)	1.04	0.88	0.83	0.98	1.23	1.48	1.61	0.98	1.42
10 Yr Treas Bonds (%)	3.62	4.35	4.35	4.60	5.00	5.00	4.61	4.06	4.98

\*\*\* Current \$ Level With IVA & CCA

\*Seasonally adjusted, annual rates except where noted.  
Source: The Conference Board

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I/B/E/S: EARNINGS ESTIMATES

--PERIOD--	-----EPS EST'S-----			# OF ESTS	CHG IN MEAN(\$):	
	MEAN	HIGH	LOW		1MONTH	3MONTH
FY 12/03	3.24	3.64	3.05	9	-0.17	-0.56
FY 12/04	3.62	4.12	3.20	10	-0.13	-0.26
QTR 09/03	0.90	0.90	0.90	1	0.00	0.43
QTR 12/03	1.20	1.20	1.20	1	0.00	0.20

EARNINGS PER SHARE ANNUAL GROWTH RATES

LAST 5 YEARS	4.2%	FY03/02	-15.4%	QTR 09/03	-6.2%
NEXT 5 YEARS	5.2%	FY04/03	11.8%	QTR 12/03	-0.8%

DTE DTE ENERGY			ESTD F/Y EPS:		
INDUSTRY CODE: ELECUT		PRICE	12/03	12/04	YIELD
ELECTRICAL UTILITIES		34.75	3.24	3.62	5.9%

FY12/02 EPS:	3.83	DIVIDEND:	2.06	YIELD:	5.9%
FY12/03 P/E:	10.7	P/E REL S&P:	0.50	P/E REL IND:	0.81
FY12/04 P/E:	9.6	P/E REL S&P:	0.52	P/E REL IND:	0.76

----FCST EPS GRWTH----

---RELATIVE----

	DTE	IND	S&P 500	DTE TO IND	DTE TO S&P
FY03 VS FY02	-15.4%	3.6%	16.1%	-432	-96
FY04 VS FY03	11.8%	5.1%	12.6%	231	93
NEXT 5 YEARS	5.2%	5.1%	12.2%	101	42
LAST 5 YEARS	4.2%	6.3%	9.7%	82	34
P/E FY 2002	10.7	13.2	21.4	81	50
P/E FY 2003	9.6	12.7	18.4	76	52

DISTRIBUTION OF EPS ESTS. AS OF 08/29/03

DTE	EPS FY 12/02	\$ 3.83
FY 12/03 - 9 ESTS	FY 12/04 - 10 ESTS	
MEAN EPS \$ 3.24	MEAN EPS \$ 3.62	

L				L		
L L XLX	X N	X	LLL	L XX N	X X	
+\$3.00	3.25	3.50	3.3.00	3.50	4.00	4.50
X=EST R/L=RAISED/LOWERED PAST MO. N=NEW PAST MO. *=9+ ESTS						

Zacks Company Report as of 10/31/03

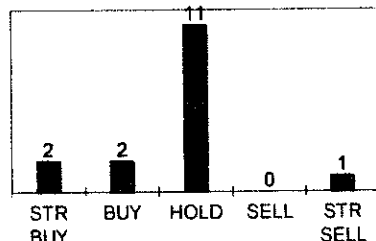
Next Earnings Report Date

				Industry: UTIL-ELEC PWR			Type: Large Blend			Zacks Rank
Rec Price	P/E	Mkt Cap	Div Rate	Yield	Sales (12Mo)	Sls Gr	EPS Gr	Div Gr		
\$36.31	13.3	\$6445 MM	\$1.84	5.1%	\$6725 MM	5%	5%	0%	Hold	

Cinergy Corp. is one of the nation's leading diversified energy companies. Cinergy owns or operates electrical and heat plant generators that are either operational or under development domestically and internationally. It also has electric and gas transmission lines in the U.S. and abroad. Cinergy Solutions focuses on cogeneration, energy services and utility outsourcing for large industrials, municipalities, universities and other large energy consumers. Its customers include BP Amoco, Kodak and General Motors. (Company Press Release)

Ave Broker Rec	#Up	#Dn
HOLD	0	2

### Broker Recommendations



### Price/Volume Data

52-Wk High	\$38.59
Low	\$29.36
PriceChg-YTD	8%
-YTD(Rel)	-10%
Avg Dly Vol	710 000s
Exp Return/Risk	
Impl Ret=Yld+Gr	9%
Beta	-0.04

### Shareholder Data

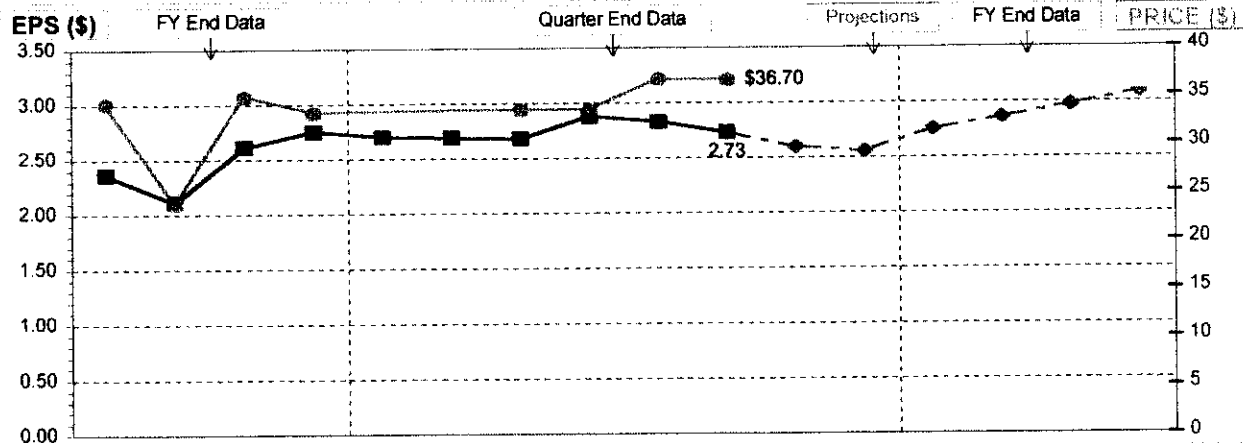
Shares Out	177.5 MM
Institutions	67.68%
Insiders	1.98%

### EPS, P/E and Growth Rates

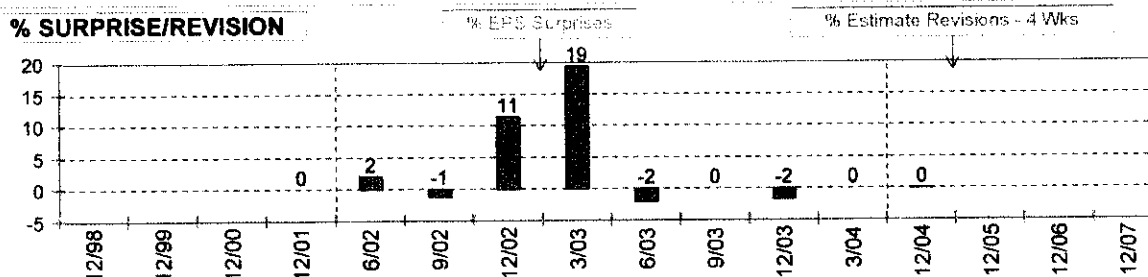
FY	EPS	P/E	Yr/Yr EPS Gr
12/02 Act	2.68	12.6	-3%
12/03 Est	2.61	13.9	-3%
12/04 Est	2.76	13.2	6%
Last 5Yr			5%
Next 3-5Yr (Est)			4%

### Other Key Measures

	Current	5-Year Avg
P/E (12 Mo)	13.3	12.4
Rel P/E	56%	
Net Margin	7%	5.4%
ROE	13.2%	14.3%
LT Debt/Cap	53%	53%



### % SURPRISE/REVISION



UTIL-ELEC PWR		Industry Comparables						Impl				
Industry #	193	Pr Chg YTD	P/E (12Mo)	EPS Gr 5Yr Est	Price/Book	Price/Sales	Price/CF	Ret/ P/E	Div Yield	Net Margin	ROE	Debt/ Cap
CINERGY CORP		8%	13.3	4%	1.8	1.0	7.0	0.67	5.1%	6.9%	13%	53%
INDUSTRY AVG*			13.6	5%	1.4		6.0	0.63	3.8%	6.2%	11%	
S&P 500		19%	23.9	7%	5.2				1.6%		17%	

\* 103 Companies in industry group.

Latest Splits: 12/03/92 1.500

Ex-Div. Date: 10/16/03

$$(1.6 * 1.07) + 7$$

# THE VALUE LINE

## Investment Survey

### Part 1 Summary & Index

File at the front of the  
Ratings & Reports  
binder. Last week's  
Summary & Index  
should be removed.

October 10, 2003

#### TABLE OF SUMMARY & INDEX CONTENTS

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#### SCREENS

Industries, in order of Timeliness Rank	24	Stocks with Lowest P/Es	35
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#### The Median of Estimated PRICE-EARNINGS RATIOS of all stocks with earnings

**17.8**

26 Weeks Ago	Market Low	Market High
15.2	9-21-01	4-16-02
15.4		20.9

#### The Median of Estimated DIVIDEND YIELDS (next 12 months) of all dividend paying stocks under review

**1.9%**

26 Weeks Ago	Market Low	Market High
2.2%	9-21-01	4-16-02
2.2%		1.6%

#### The Estimated Median Price APPRECIATION POTENTIAL of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

**50%**

26 Weeks Ago	Market Low	Market High
85%	9-21-01	4-16-02
85%	105%	55%

#### ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numerals in parenthesis after the industry is rank for probable performance (next 12 months)

INDUSTRY	PAGE	INDUSTRY	PAGE	INDUSTRY	PAGE
Advertising (67)	1924	Educational Services (2)	544	Food Processing (81)	1467
Aerospace/Defense (58)	543	Electric Power (3)	545	Food Wholesalers (24)	1532
Air Transport (39)	253	Electric Utility (4)	546	Foreign Electronics (68)	1561
Apparel (63)	1651	Electric Utility (5)	547	Foreign Telecom (7)	768
Auto & Truck (37)	101	Electric Utility (6)	548	*Furn/Home Furnishings (94)	695
Auto Parts (31)	795	Electronics (34)	1052	Grocery (62)	1517
Bank (49)	2101	Entertainment (35)	1053	Healthcare Information (10)	654
Bank (Canadian) (64)	1570	Environmental (36)	1054	Home Appliances (32)	1172
Bank (Midwest) (65)	613	Financial Svcs. (Div.) (38)	2138	*Homebuilding (1)	867
Beverage (Alcoholic) (60)	1537	Food Processing (81)	1467	Hotel/Gaming (55)	1878
Beverage (Soft Drink) (51)	1545	Food Wholesalers (24)	1532	*Household Products (78)	941
Biotechnology (41)	670	Foreign Electronics (68)	1561	Human Resources (80)	1290
*Building Materials (76)	851	Foreign Telecom (7)	768	Industrial Services (79)	824
Cable TV (17)	828	*Furn/Home Furnishings (94)	695	Information Services (8)	389
Canadian Energy (72)	428	Grocery (62)	1517	Insurance (Life) (59)	1205
*Cement & Aggregates (43)	888	Healthcare Information (10)	654		
Chemical (Basic) (93)	1238	Home Appliances (32)	1172		
Chemical (Diversified) (89)	1966	*Homebuilding (1)	867		
Chemical (Specialty) (82)	477	Hotel/Gaming (55)	1878		
Coal (70)	526	*Household Products (78)	941		
Computers/Peripherals (28)	1106	Human Resources (80)	1290		
Computer Software/Svcs (11)	2172	Industrial Services (79)	824		
Diversified Co. (75)	1377	Information Services (8)	389		
Drug (18)	1246	Insurance (Life) (59)	1205		
E-Commerce (12)	1434				

In three parts: This is Part 1, the Summary & Index. Part 2 is Ratings & Reports, Volume I.D., No. 8. Published weekly by VALUE LINE PUBLISHING, INC. 220 East 42nd Street, New York, NY 10017-5881

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Item 19, page 9



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

20. In reference to Schedules 44-49:
- a. Provide a computer disc with all data and calculational formulas underlying these schedules.
  - b. Explain why Dr. Weaver ended the analysis in 2001, rather than going through 2002.
  - c. Explain why Dr. Weaver used only nine holding periods, while in past testimonies he has used ten.
  - d. Is it Dr. Weaver's opinion that investors would give the same weight to a return achieved, for example, between 1994-1995 compared with a return achieved in 2000-2001? Explain the response.
  - e. Provide a copy of the Standard and Poor's *Stock Reports* dated November 30, 2002 for each company.
  - f. Provide a copy of the most recent Standard & Poor's *Stock Reports* for each company.
  - g. Provide a copy of the source from which the yields on Treasury securities were taken.

Answer:

- a. enclosed
- b. See testimony, page 43, line 22 through page 44, line 9.
- c. The "Business Cycle Dating Committee" of the National Bureau of Economic Research "determined that a trough in business activity occurred in the U.S. economy in November 2001. The trough marks the end of the recession than began in March 2001 and the beginning of an expansion" (NBER Report released July 2003). 1992 marked the beginning of an expansion that ran to the recession that began in March 2001. This period represents a complete business cycle. If 1992 had been included, a complete cycle plus a year containing an expansion would be represented. The data would be biased upward.
- d. No. Stock market performance is a leading economic indicator. Investors react to their expectations rather than historical results. This a major reason why a complete business should be included in historical data analysis. The period 1994-1995 represents a period of economic expansion that would have been anticipated prior to it occurring. Likewise, the period 2000-2001 ended with a March 2001 through November 2001 recession. Investor expectations would perhaps foreseen both events but the amount of lead time in foreseeing the expansion and recession may differ causing the two period to be incomparable.

*Item 20, page 1*

e. Attached.

f. Attached.

g. Attached



**Sub-Industry:** Multi-Utilities & Unregulated Power

**Summary:** This holding company owns energy-related businesses, including a North American wholesale power marketing and merchant generation business, and Baltimore Gas and Electric Co.

eration capacity. During 2002, 88.1% of Energy Merchants generation output was derived from nuclear and coal-fired power plants. This segment also houses competitive supply operations conducted by NewEnergy and other businesses.

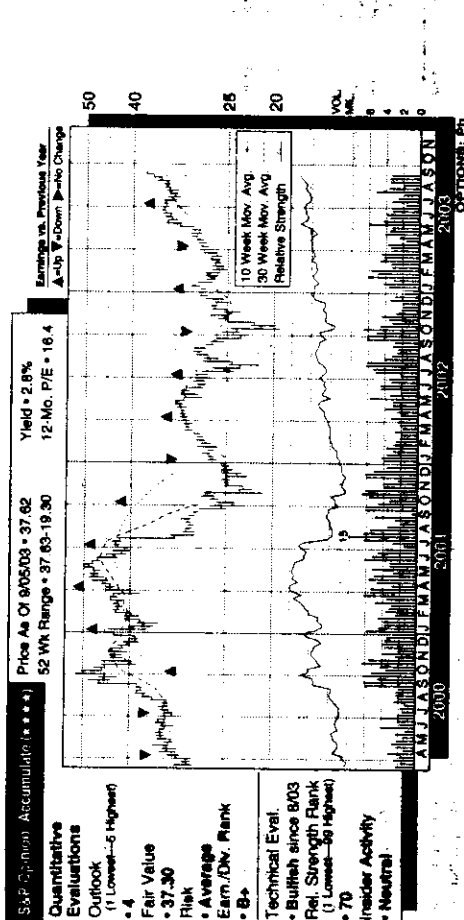
Regulated utility operations are performed by Baltimore Gas and Electric (BGE), which serves a 1.17 million electric customers and 609,000 gas customers at the end of 2002. BGE's residential electric rates have been fixed through July 2008 under Maryland's electric deregulation initiatives. CEG shareholders get to share in gas fuel cost savings BGE realizes for distribution customers that also rely on it for gas supply (BGE supplies about half the gas on its distribution system).

Other Nonregulated businesses include Energy Products and Services for commercial and industrial customers, residential HVAC (heating, ventilation and air-conditioning) and competitive retail energy supply services, and district cooling services for Baltimore commercial customers.

During 2002, CEG raised a total of \$635 million in cash from divestitures. In February 2002, the company sold its interests in shares of Orion Power to Reliant Resources for \$454 million. In March, CEG sold its interests in Corporate Office Properties Trust through a public offering, raising \$101.3 million. Additional 2002 divestitures included a South African generation project, 18 senior living facilities, and about 800 acres of land holdings.

**Business Summary... 08-AUG-03**

In recent periods, Constellation Energy Group has made strategic acquisitions from distressed energy merchants and utilities while divesting non-core operations. In September 2002, Constellation Energy acquired NewEnergy, a competitive energy supplier for large commercial and industrial customers, from AES Corp. for \$250 million in cash. In December 2002, CEG added to its NewEnergy operations through the acquisition of energy management and consulting businesses from Alliant Energy for \$21.2 million. In the first quarter of 2003, CEG also announced the acquisition of 125 megawatts (MW) of Canadian energy management contracts from Dynegy, 940 MW of energy contracts from CMS Energy Corp., and 300 MW of energy contracts from Nicor Energy. CEG's operating segments include its Merchant Energy business, accounting for 87% of operating income in 2002 (76% in 2001), 87% in 2003; Regulated Electric Utility operations in 23% (22%, 34%); Regulated Gas Utility operations 8% (10%, 9%); and Other Nonregulated businesses 4% (-7%, -11%). Merchant Energy operations include wholesale power generation, energy contract origination and risk management services, and retail energy supply services. With the April 2003 completion of a new 830 MW California power plant, Merchant Energy owned approximately 12,130 MW of gener-



Overview - 08-AUG-83

accounting rule changes will force CEG to record certain transactions on a gross basis beginning in 2003 (increasing reported revenues and operating expense by equal amounts). We look for a net increase in operating expense to increase more than 1%, driven by cost cuts, acquisitions, and growing energy risk management services. We look for nearly flat depreciation and amortization charges. However, we expect a more than 5% increase in net interest expenses, largely due to reductions in capitalized interest. In our estimation, operating earnings should grow almost 13%. Our 2003 EPS estimate excludes a first quarter asset sale gain of \$0.04, and a net first quarter charge of \$1.20, related to accounting changes. Reversing the quarter charge of \$1.20, reflected net one-time gains of \$0.23, including \$1.00 in first quarter asset sale gains (primarily from the \$454 million sale of CEG's interest in Orion Power Holdings). We estimate 2003 Standard & Poor's Core Earnings per share at \$2.82.

Refutation - 08-AUG-03

We see CEG's acquisitions of quality assets from distressed energy merchants over the past 12 months providing meaningful EPS growth opportunities. In particular, we are very impressed by the company's creation of a national energy risk management business (serving industrial and commercial customers), which we think dovetails well with its large base of unregulated wholesale generation. Management is confident that CEG can generate at least 10% average annual EPS growth over the next three to four years. Given CEG's investment grade credit rating and its strong hedged position in merchant generation, we believe the shares would be fairly valued at a modest discount to more regulated utility peers. Utilizing just under a 12.5X 2004 P/E ratio (vs. about 18X for more regulated peers), we arrive at a 12-month target price of \$38. Combined with over a 5% dividend yield, we expect CEG to provide a total return of about 15% in the coming year.

Per Share Data (\$)		Year Ended Dec. 31											
		2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
tangible Bk. Val.		22.71	23.44	20.68	19.95	15.98	19.44	19.25	18.95	18.42	17.82	17.32	16.82
earnings		3.20	0.82	2.30	2.18	2.06	1.72	1.85	2.02	1.93	1.85	1.85	1.85
10% Corp. Earnings		1.75	0.34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
dividends		0.96	0.48	1.68	1.68	1.68	1.68	1.59	1.58	1.51	1.47	1.47	1.47
payout Ratio		30%	52%	73%	77%	81%	95%	86%	77%	78%	79%	79%	79%
10% High		32.38	50.14	52.08	31.50	33.25	34.31	29.50	20.00	25.50	27.50	27.50	27.50
10% Low		19.30	20.90	27.08	24.68	29.25	24.75	25.00	22.00	20.50	22.50	22.50	22.50
P/E Ratio - High		10	98	23	14	17	20	18	14	13	15	15	15
P/E Ratio - Low		6	40	12	11	14	14	14	11	11	12	12	12

[illegible]

Financial Statement & Other Fm. Data (Million 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## STOCK REPORTS

06-SEP-03 Sub-Industry: Electric Utilities

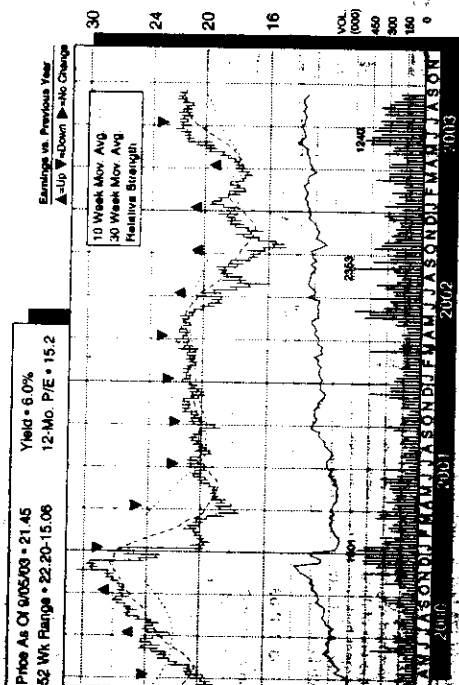
Summary: EDE provides electric service to parts of Missouri, Kansas, Oklahoma and Arkansas, and also provides water service to three towns in Missouri.

Quantitative Evaluations  
 Outlook (1 Lowest—5 Highest)  
 Price As Of 9/05/03 • 21.45  
 52 Wk Range • 22.20-15.06  
 Yield • 6.0%  
 12-Mo P/E • 15.2

Volatility  
 10 Week Mov Avg  
 30 Week Mov Avg  
 52 Week Mov Avg  
 Beta

Price Value  
 • 22  
 Risk  
 • Low  
 Earn/Div. Rank  
 • B

Technical Eval.  
 Bullish since 8/03  
 Ref: Strength Rank  
 (1 Lowest—5 Highest)  
 • 28  
 Insider Activity  
 • Neutral



## Key Stock Statistics

	2000	2001	2002	2003
Dividend Rate/Share	1.28	1.28	1.28	1.28
Div. Yield (%)	6.43	6.09	5.83	6.09
Div. Payout Ratio (%)	22.6	22.6	22.6	22.6
Div. Growth (%)	0.00	0.00	0.00	0.00
Div. Coverage	1.12	1.12	1.12	1.12
Div. Sustainability	1.12	1.12	1.12	1.12
Div. Safety	1.12	1.12	1.12	1.12
Div. Growth	1.12	1.12	1.12	1.12
Div. Sustainability	1.12	1.12	1.12	1.12
Div. Safety	1.12	1.12	1.12	1.12
Div. Growth	1.12	1.12	1.12	1.12

Price/Share Ending Dec. 31

	2000	2001	2002	2003
Revenue (\$)	76.91	80.55	84.06	87.74
Net Income (\$)	74.80	78.40	81.20	84.80
Operating Income (\$)	74.80	78.40	81.20	84.80
EBITDA (\$)	74.80	78.40	81.20	84.80
EBIT (\$)	74.80	78.40	81.20	84.80
EBT (\$)	74.80	78.40	81.20	84.80
EBTAX (\$)	74.80	78.40	81.20	84.80
EBTAXADJ (\$)	74.80	78.40	81.20	84.80
EBTAXADJADJ (\$)	74.80	78.40	81.20	84.80
EBTAXADJADJADJ (\$)	74.80	78.40	81.20	84.80
EBTAXADJADJADJADJ (\$)	74.80	78.40	81.20	84.80

Next earnings report expected: early December

Dividend Data (Dividends have been paid since 1944.)

Amount	Date	Ex-Div. Date	Stock of Record	Payment Date
0.320	Oct. 31	Nov. 26	Dec. 01	Dec. 15 '02
0.320	Feb. 06	Feb. 26	Mar. 01	Mar. 15 '03
0.320	Apr. 24	May 28	Jun. 01	Jun. 15 '03
0.320	Jul. 24	Aug. 27	Sep. 01	Sep. 15 '03

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## STANDARD &amp; POOR'S

## The Empire District Electric Company

## STOCK REPORTS

Business Summary - 10-MAR-03

Empire District Electric (EDE) generates, purchases, transmits, distributes and sells electricity in parts of Missouri, Kansas, Oklahoma and Arkansas. The company also provides water service to three towns in Missouri. In 2001, nearly all gross operating revenues came from electricity sales, with under 1% from water sales.

EDE's service territory consists of approximately 10,000 square miles and a population of more than 360,000, primarily throughout southwestern Missouri and smaller parts of southeastern Kansas, northeastern Oklahoma and northwestern Arkansas. In 2001, 88% of total retail electric revenues were earned in Missouri, Kansas, Oklahoma and Arkansas customers provided 6%, 3% and 3% of total electric revenues, respectively. In 2001, 42% of EDE's operating revenues came from residential customers. Commercial, industrial, wholesale and other customers provided 31%, 17%, 6% and 4%, respectively.

The company supplies electric service at retail to 119 incorporated communities, to various unincorporated areas, and at wholesale to four municipally owned distribution systems and two rural electric cooperatives. The largest urban area served is Joplin, MO, and its immediate vicinity, with a population of 157,000. EDE operates under franchise with original terms

of 20 years or longer in virtually all of the incorporated communities. About 51% of electric operating revenues in 2001 came from incorporated communities with franchises having at least 10 years remaining, and about 18% were from incorporated communities in which franchisees have remaining terms of 10 years or less.

Based on kilowatt hours generated, coal was used to supply 70% of total fuel requirements. Natural gas supplied 29%, with oil generation providing less than 1%. EDE expects to increase the amount of gas used as a fuel source. Construction spending totaled about \$71.8 million in 2001. The company projects that construction spending will rise to \$72.2 million in 2002, and \$85.8 million in 2003.

The maximum hourly demand on the company's system reached a record high of 1,001 megawatts on August 9, 2001. The previous record peak of 983 megawatts was established in August 2000. EDE set a new maximum hourly winter demand of 841 megawatts on December 18, 2000.

In May 1999, EDE agreed to be acquired by UtiliCorp United, Inc., a Kansas City, MO-based electric and gas utility, for approximately \$600 million, including \$505 million in stock and cash and the assumption of \$260 million in debt. In January 2001, UtiliCorp terminated the agreement, citing lack of receipt of necessary regulatory approvals.

06-SEP-03

Per Share Data (\$)	1997	1998	1999	2000	2001	2002	2003	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Book Value	12.84	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72	12.72
Earnings	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
S&P Core Earnings	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Dividends	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Payout Ratio	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Price: High	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75	28.75
Price: Low	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06	15.06
P/E Ratio - High	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6
P/E Ratio - Low	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8

Incoming Statement Analysis (Million \$)

	1997	1998	1999	2000	2001	2002	2003	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Revenue	76.91	80.55	84.06	87.74	91.42	95.10	98.78	76.91	80.55	84.06	87.74	91.42	95.10	98.78	102.46	106.14	109.82
Exp.	74.80	78.40	81.20	84.80	88.40	92.00	95.60	74.80	78.40	81.20	84.80	88.40	92.00	95.60	99.20	102.80	106.40
Net Income	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Operating Income	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBITDA	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBIT	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBT	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBTAX	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBTAXADJ	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBTAXADJADJ	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBTAXADJADJADJ	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
EBTAXADJADJADJADJ	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42

Balance Sheet & Other Fin. Data (Million \$)

	1997	1998	1999	2000	2001	2002	2003	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Assets	76.91	80.55	84.06	87.74	91.42	95.10	98.78	76.91	80.55	84.06	87.74	91.42	95.10	98.78	102.46	106.14	109.82
Liabilities	74.80	78.40	81.20	84.80	88.40	92.00	95.60	74.80	78.40	81.20	84.80	88.40	92.00	95.60	99.20	102.80	106.40
Equity	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Debt	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Capital	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Retained Earnings	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Common Stock	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Preferred Stock	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42
Minority Interest	2.11	2.15	2.86	2.94	3.02	3.10	3.18	2.11	2.15	2.86	2.94	3.02	3.10	3.18	3.26	3.34	3.42

Operating Data (Dividends have been paid since 1944.)

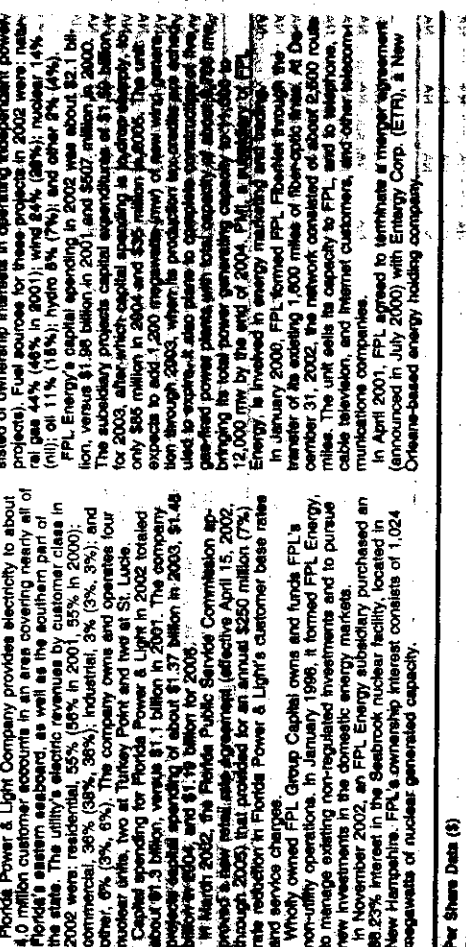
Amount	Date	Ex-Div. Date	Stock of Record	Payment Date
0.320	Oct. 31	Nov. 26	Dec. 01	Dec. 15 '02
0.320	Feb. 06	Feb. 26	Mar. 01	Mar. 15 '03
0.320	Apr. 24	May 28	Jun. 01	Jun. 15 '03
0.320	Jul. 24	Aug. 27	Sep. 01	Sep. 15 '03

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**Business Summary - 28-AUG-03**  
FPL Group is the holding company for Florida Power & Light Company and FPL Group Capital.

As of December 31, 2002, FPL Energy had ownership interests in operating independent power projects with a net generating capacity of 7,250 megawatts (of which 6,700 mw. consisted of ownership interests in several independent power projects).



## Year Ended Dec. 31)

	2008	2007	2006	2005	1999	1998
BAP EPS Est. 2003	4.90					Temp. BK. Value/Share
WTE on BAP Est. 2003	12.6					Beta
WTE on S&P Est. 2004	8.10					Insiders
Dividend Payout/Share	2.40					Market cap. (\$)
Sh. out. (M)	183.6					Inst. holdings
Avg. daily vol. (M)	0.815					
Value of \$70,000 invested five years ago: \$ 11,327						
Fiscal Year Ending Dec. 31						
	2008	2007	2006	2005	1999	1998
Revenue (billion \$)	1,843	1,941			1,468	1,412
Q	2,173	2,166			1,670	1,614
Q	2,459	2,248			2,087	1,962
Q	—	2,353	2,520		2,087	1,962
Q	—	2,029	1,839		1,867	1,520
Q	—	8,311	8,475		7,082	6,438
Q	—	—	—		—	6,961

Next earnings report expected: mid October									
Dividend Data (Dividends have been paid since 1944.)									
	Earnings Per Share (\$)		Ex-Div. Date		Stock of Record		Payment Date		
	Q	Y	Q	Y	Q	Y	Q	Y	
1990	0.99	0.98	0.65	0.71	1.22	1.22	Nov 28	Dec 18 '02	
1991	1.34	1.46	1.20	1.20	0.45	1.02	Feb 28	Mar 17 '03	
1992	1.86	1.85	1.98	1.84	1.70	1.86	Jun 06	Jun 18 '03	
1993	50.72	0.73	0.70	0.38	0.71	0.84	Aug 29	Sep 15 '03	
1994	54.90	4.01	4.52	4.14	4.07	3.86			

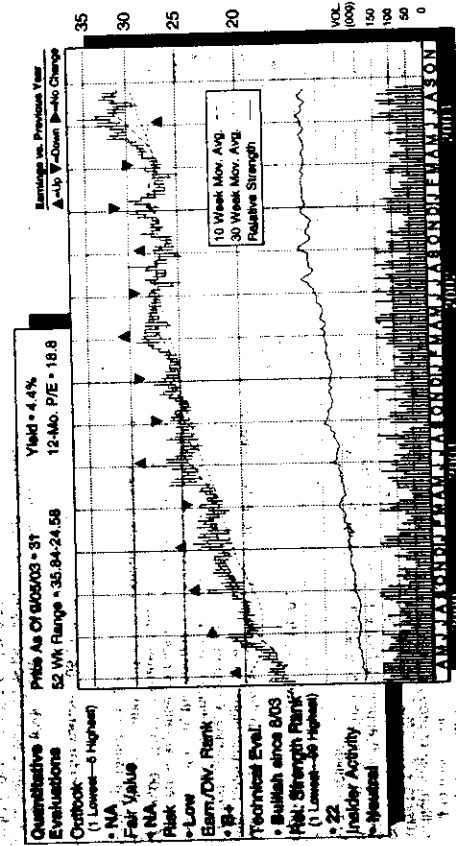
	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
34.92	34.18	31.78	30.00	28.32	26.62	24.91	24.08	22.50	21.58	19.88
4.01	4.82	4.14	4.07	3.86	3.57	3.33	3.16	2.91	2.30	
3.04	3.95	NA	NA	NA	NA	NA	NA	NA	NA	
2.25	2.94	2.16	2.06	2.00	1.92	1.84	1.78	1.68	2.47	
5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	107%	
68.31	71.62	73.00	61.98	72.56	60.00	48.12	40.90	39.12	41.00	
40.00	51.21	36.37	41.12	56.06	42.62	41.60	34.80	26.67	36.50	
11	11	8	10	15	12	12	11	9	15	
8,311	8,475	7,082	6,436	6,661	6,966	6,037	6,692	6,453	6,616	
962	963	1,032	1,040	1,284	1,061	660	916	724	998	
4.52	4.51	4.55	4.98	NA	NA	NA	NA	NA	NA	
NA	NA	NA	NA	NA	3.97	4.01	8.54	3.20	2.96	
NA	NA	NA	NA	NA	2.00	2.00	1.50	24.0	18.2	
26.0%	32.7%	32.3%	31.7%	29.6%	33.0%	33.6%	37.3%	37.2%	36.5%	
695	781	704	697	564	618	579	553	519	423	
527	616	NA	NA	NA	NA	NA	NA	NA	NA	
26,505	23,368	21,022	19,654	17,952	17,620	17,034	16,725	16,390	15,981	
1,277	1,544	1,299	981	617	851	468	671	906	1,246	
14,304	11,662	9,934	9,264	8,555	9,354	9,364	9,662	10,203	10,286	
6,016	5,094	4,202	3,704	2,347	2,949	3,144	3,377	4,060	4,020	
47.4	45.8	42.3	40.8	30.5	36.8	39.0	41.6	47.1	46.4	
NA	NA	NA	NA	226	226	332	340	545	548	
NA	NA	NA	NA	2.90	2.80	4.10	4.20	6.30	6.30	
6,888	6,015	5,593	5,166	4,845	4,562	4,362	4,197	4,107	4,107	
52.6	54.2	57.1	59.2	66.6	60.4	56.9	54.2	48.8	47.3	
14,444	12,809	11,442	10,337	9,159	9,493	10,201	10,296	10,917	10,722	
85.7	87.6	86.3	86.0	85.4	85.5	85.5	84.5	84.5	86.4	
0.5	10.2	12.0	16.2	14.0	13.1	9.1	11.9	8.2	7.2	
8.4	8.2	9.9	10.6	10.0	9.7	9.6	8.9	9.6	8.1	
9.0	9.6	9.7	11.4	10.7	9.4	8.5	9.1	7.8	7.0	
10.7	13.5	12.8	13.3	13.3	13.1	12.8	12.6	12.5	12.5	

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402
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**06-SEP-03** Sub-Industry: Electric Utilities  
Summary: The principal subsidiary of this public utility holding company is Madison Gas & Electric, which generates and distributes electricity and distributes natural gas in Wisconsin.



**Qualitative Data:**  
Outlook: (1) Lowest - 6 Highest  
Fair Value: (1) Lowest - 6 Highest  
Risk: (1) Lowest - 6 Highest  
Earnings/Div. Rank: (1) Lowest - 6 Highest  
Technical Eval: (1) Lowest - 6 Highest  
Anal. Strength Rank: (1) Lowest - 6 Highest  
Hedge Activity: (1) Lowest - 6 Highest

## Business Profile - 10-JUL-03

In March 2003, MGE registered a shelf offering covering up to \$200 million in medium-term notes to be offered from time to time. Net proceeds would be earmarked for financing capital expenditures and future acquisitions, reduction of debt, and for other corporate purposes. In August 2002, Madison Gas & Electric adopted a leading-generosity program, with each common share entitling the holder to a common share of MGE Energy, Inc. MGE said it believed the holding company structure will let it raise capital in financial markets. In order to maintain its credit rating, MGE said it would not use the proceeds to acquire other utility companies. MGE said it would continue to focus on the utility business in its local markets.

## Financial Profile - 10-JUL-03

MGE's operating revenues for the first quarter of 2003 declined 1.1% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002.

## Company Performance - 06-SEP-03

MGE's operating revenues for the first quarter of 2003 declined 1.1% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002.

## Dividend Data (Dividends have been paid since 1909)

MGE's operating revenues for the first quarter of 2003 declined 1.1% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002.

## Key Stock Statistics

MGE's operating revenues for the first quarter of 2003 declined 1.1% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002. MGE's operating income rose 10% from the first quarter of 2002. MGE's earnings per share rose 10% from the first quarter of 2002.

Key Stock Statistics

Dividend Rate/Share	1.36	Shareholders	18,000
Dividend Yield (%)	17.9	Market Cap. (\$)	\$0.555
Dividend Payout Ratio	0.001	Market Cap. (\$)	23%
Dividend Growth (%)	13.29	Market Cap. (\$)	
Dividend Coverage	0.05	Market Cap. (\$)	

Value of \$100,000 Invested Five Years Ago: \$18,224

Fiscal Year Ending Dec. 31	2003	2002	2001	2000	1999
Revenue (million \$)	129.5	98.27	122.0	94.54	79.53
Operating Income (million \$)	82.85	74.00	72.28	64.19	57.15
Operating Profit (million \$)	82.85	74.00	72.28	64.19	57.15
Operating Margin (%)	64.0	75.4	59.5	67.9	71.8
Operating Profit Margin (%)	64.0	75.4	59.5	67.9	71.8
Operating Profit Per Share (\$)	4.40	3.47	3.33	3.41	2.74

Next earnings report expected: early November

Dividend Data (Dividends have been paid since 1909)	Amount	Date	Ex-Div. Date	Record Date	Payment Date
0.358	Nov. 15	Nov. 26	Dec. 01	Dec. 15	Dec. 15
0.358	Feb. 28	Mar. 01	Mar. 01	Mar. 15	Mar. 15
0.358	May. 30	May. 28	Jun. 01	Jun. 15	Jun. 15
0.358	Aug. 15	Aug. 27	Sep. 01	Sep. 15	Sep. 15

Dividend Data (Dividends have been paid since 1909)

Dividend Data (Dividends have been paid since 1909)	Amount	Date	Ex-Div. Date	Record Date	Payment Date
0.358	Nov. 15	Nov. 26	Dec. 01	Dec. 15	Dec. 15
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0.358	Aug. 15	Aug. 27	Sep. 01	Sep. 15	Sep. 15

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0.358	May. 30	May. 28	Jun. 01	Jun. 15	Jun. 15
0.358	Aug. 15	Aug. 27	Sep. 01	Sep. 15	Sep. 15

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0.358	Feb. 28	Mar. 01	Mar. 01	Mar. 15	Mar. 15
0.358	May. 30	May. 28	Jun. 01	Jun. 15	Jun. 15
0.358	Aug. 15	Aug. 27	Sep. 01	Sep. 15	Sep. 15

Income Statement Analysis (million \$)

Revenue	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Revenue	129.5	98.27	122.0	94.54	79.53	64.19	57.15	51.0	44.0	38.0	32.0
Operating Income	82.85	74.00	72.28	64.19	57.15	51.0	44.0	38.0	32.0	26.0	20.0
Operating Profit	82.85	74.00	72.28	64.19	57.15	51.0	44.0	38.0	32.0	26.0	20.0
Operating Margin (%)	64.0	75.4	59.5	67.9	71.8	79.4	77.1	74.5	72.7	68.4	62.5
Operating Profit Margin (%)	64.0	75.4	59.5	67.9	71.8	79.4	77.1	74.5	72.7	68.4	62.5
Operating Profit Per Share (\$)	4.40	3.47	3.33	3.41	2.74	2.34	2.00	1.75	1.50	1.25	1.00

Balance Sheet & Other Fin. Data (million \$)

Assets	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Assets	129.5	98.27	122.0	94.54	79.53	64.19	57.15	51.0	44.0	38.0	32.0
Liabilities	82.85	74.00	72.28	64.19	57.15	51.0	44.0	38.0	32.0	26.0	20.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Debt	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0

Balance Sheet & Other Fin. Data (million \$)

Assets	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Assets	129.5	98.27	122.0	94.54	79.53	64.19	57.15	51.0	44.0	38.0	32.0
Liabilities	82.85	74.00	72.28	64.19	57.15	51.0	44.0	38.0	32.0	26.0	20.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Debt	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0

Balance Sheet & Other Fin. Data (million \$)

Assets	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Assets	129.5	98.27	122.0	94.54	79.53	64.19	57.15	51.0	44.0	38.0	32.0
Liabilities	82.85	74.00	72.28	64.19	57.15	51.0	44.0	38.0	32.0	26.0	20.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Debt	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0

Balance Sheet & Other Fin. Data (million \$)

Assets	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Assets	129.5	98.27	122.0	94.54	79.53	64.19	57.15	51.0	44.0	38.0	32.0
Liabilities	82.85	74.00	72.28	64.19	57.15	51.0	44.0	38.0	32.0	26.0	20.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Debt	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0
Equity	46.65	24.27	49.72	30.35	22.38	13.19	13.15	6.0	12.0	12.0	12.0

Per Share Data (\$)

Year Ended Dec. 31	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Earnings	12.86	10.88	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Dividends	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Payout Ratio	10.6	12.5	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
Price	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
High	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
Low	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
P/E Ratio - High	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8
P/E Ratio - Low	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8

Per Share Data (\$)

Year Ended Dec. 31	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Earnings	12.86	10.88	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Dividends	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Payout Ratio	10.6	12.5	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
Price	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
High	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
Low	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
P/E Ratio - High	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8
P/E Ratio - Low	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8

Per Share Data (\$)

Year Ended Dec. 31	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Earnings	12.86	10.88	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Dividends	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Payout Ratio	10.6	12.5	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
Price	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
High	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
Low	37.0	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
P/E Ratio - High	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8
P/E Ratio - Low	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.8

Per Share Data (\$)

Year Ended Dec. 31	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994
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## PNM Resources

NYSE Symbol PNM  
In S&P MidCap 400

## PNM Resources, Inc.

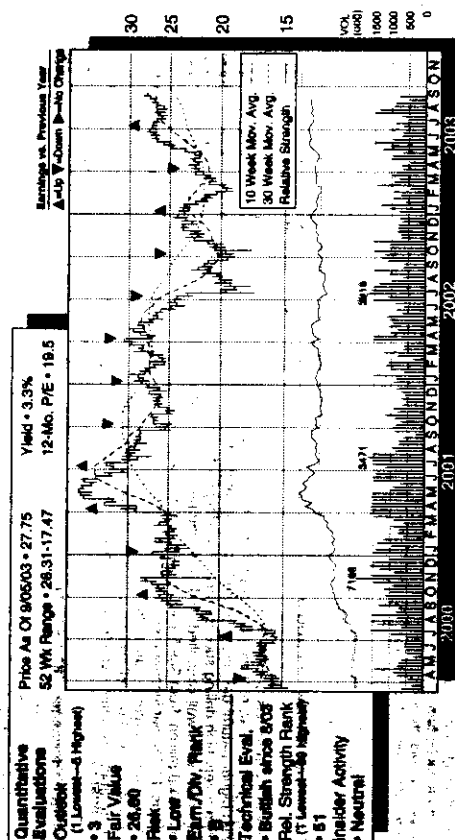
STOCK REPORT

## STOCK REPORTS

## 06-SEP-03

Sub-Industry:  
Electric Utilities

Summary: This company operates electric and gas utilities in New Mexico through Public Service Company of New Mexico, and sells wholesale power in the western U.S.



## Business Profile - 16-JUL-03

In April 2003, PNM reiterated its estimate of 2003 EPS from continuing operations of \$1.80 to \$2.05 (excluding one time gains and charges). A planned maintenance outage shut down one unit of the company's San Juan Generating Station during much of the first quarter, and other San Juan units experienced intermittent forced outages in February and March. The restricted availability of the San Juan plant due to those outages added about \$0.5 million to purchased power expense during the quarter. In January, New Mexico regulators approved an agreement to reduce another electric rates by \$0.01 per kilowatt-hour in 2003 and another \$0.14 million in 2004, and raise them until 2008. Also in January, the company began delivering power to U.S. Navy facilities in San Diego. In contrast, which expires in March 2005, is expected to produce annual revenues of \$42 million.

## Operational Review - 16-JUL-03

Operating revenues in the three months ended March 31, 2003, rose 25% year to year, on a 28% gain in electric revenues, coupled with a 34% gain in gas revenues. A long term power sales contract with the U.S. Navy, increased sales under an existing contract and higher market prices aided revenue growth. Total operating expenses were up 32%, primarily on significant increases in the cost of energy sold; gross profit was up 2.5%. With a 21% climb in interest charges and net other expense of \$4.3 million, versus income of \$7.4 million, income fell 56%, from \$24,949,000 (\$0.63) share, after preferred dividends, from \$24,949,000 (\$0.63) share. Results in the 2003 period exclude a credit of \$0.95 a share from an accounting change.

## Stock Performance - 06-SEP-03

In the past 90 trading days, PNM's shares have increased 6%, compared to a 5% rise in the S&P 500. Average trading volume for the past five days was 1,939,976 shares, compared with the 60-day moving average of 1,602,221 shares.

## DISCLOSURE

For important regulatory information, go to [www.standardandpoors.com](http://www.standardandpoors.com). Regulatory disclosures, if any, are included in the report. All of the views expressed in this report are solely the views of the research analyst and do not reflect the views of Standard & Poor's. The report is not a recommendation to buy, sell, or hold any security, and should not be considered a solicitation to buy or sell any security. Neither S&P nor any other party guarantees its accuracy or makes any representation or warranty, express or implied, in connection with the report. Redistribution is prohibited without written permission. Copyright © 2003.

Analyst: Michael Hirschman/CBS/TS

## STOCK REPORTS

## Business Summary - 18-JUL-03

PNM Resources is the holding company for Public Service Company of New Mexico, a utility involved in the generation, transmission, distribution and sale of electricity and natural gas in New Mexico; it also sells power in the wholesale market in the western U.S. In December 2001, the company reorganized its operations into a holding company, PNM Resources, Inc., creating two subsidiaries to separate deregulated activities from regulated activities, as required by the Electric Utility Industry Restructuring Act. The company operates three business units: utility operations; generation and marketing operations; and unregulated operations. Utility operations include both electric and natural gas offerings. The company provides jurisdictional retail electric service to a large area of north central New Mexico. At December 31, 2002, PNM had an average of 384,478 retail electric customers. The company's gas operations market and distribute natural gas to most of the major communities across New Mexico, serving an average of 443,395 customers at 2002 year end.

PNM's generation and marketing operations serve four principal markets. The first market consists of sales to the company's utility operations to cover all of its jurisdictional electric demand. The second segment focuses on sales to firm requirements wholesale customers. The third market consists of contract sales to third parties, with PNM committing itself to providing a specified amount of megawatts (MW) in a given

time period. The fourth market consists of energy sales from excess capacity made on an hourly basis at varying spot market prices. As of December 31, 2002, total net generation capacity of facilities owned or leased by the company was 1,743 MW, with the San Juan Generating Station at 765 MW; Four Corners 182 MW; Palo Verde Nuclear Generating Station 380 MW; Reeves Station 184 MW; Altam 141 MW; Longhorn 80 MW; and Las Vegas Station 20 MW. PNM also purchases power in the market under contracts. Unregulated operations are conducted through wholly owned Avistar. In July 2001, Avistar wound down all operations except for its Reliant business unit, which provides maintenance solutions to the electric power industry. Avistar had previously divested its electric power business, and had liquidated Avon Field services and Pathways Integration, recording charges of \$13.1 million to reflect these activities and the impairment of its Avistar investments.

In January 2003, PNM filed a gas general rate case, which asks the PRC to approve an increase in the service fees charged to its 441,000 natural gas customers. The proposal would increase both the set monthly service fee and the charge tied to monthly usage. Those fees are separate from the cost of gas charged to customers. The proposed cost of service rate increase of \$37.6 million is designed to provide PNM's gas utility an opportunity to earn a 12% return on equity; the company's return on equity from its gas business was below 3% as of December 2002.

## Per Share Data (\$)

(Year Ended Dec. 31)	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Tangible Bk. Val.	24.90	22.82	23.63	23.01	20.61	19.25	18.04	16.80	15.08	13.29
Earnings	1.61	3.77	2.53	2.01	2.28	1.92	1.72	1.72	1.77	1.64
S&P Core Earnings	0.88	3.37	NA	NA	NA	NA	NA	NA	NA	NA
Dividends	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Payout Ratio	53%	21%	32%	40%	34%	33%	21%	21%	21%	21%
Prices - High	30.76	37.80	28.31	21.50	24.75	23.68	20.50	18.25	13.42	18.87
Prices - Low	17.25	22.87	14.62	14.84	17.37	15.75	17.25	12.12	11.00	9.75
P/E Ratio - High	19	10	11	11	11	12	12	11	8	NA
P/E Ratio - Low	11	6	6	7	8	8	10	7	6	NA

## Income Statement Analysis (Million \$)

	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Revs.	1,189	2,352	1,611	1,158	1,092	1,135	983	808	905	874
Deprec.	102	98.9	93.1	92.7	86.1	82.7	78.1	60.9	74.1	77.3
Market	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Prod. Chgs. Cov.	2.56	4.53	3.65	2.70	3.36	3.24	3.04	2.96	2.53	NA
Operating Income	38.9%	35.0%	42.4%	34.7%	37.2%	36.6%	36.5%	28.6%	36.5%	NA
Eff. Tax Rate	64.3	150	101	79.6	95.1	61.0	72.8	75.6	80.3	-61.5
Net Inc.	54.7	138	NA	NA	NA	NA	NA	NA	NA	NA
S&P Core Earnings	84.3	150	101	79.6	95.1	61.0	72.8	75.6	80.3	-61.5

## Balance Sheet &amp; Other Fin. Data (Million \$)

	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Gross Prop.	3,100	3,017	2,774	2,684	3,110	2,881	2,490	2,467	2,868	2,850
Cap. Exp.	240	266	147	98.3	189	126	88.9	107	119	101
Net Prop.	1,858	1,758	1,627	1,585	1,921	1,755	1,534	1,374	1,697	1,704
Capitalization:										
LT Debt	980	964	864	988	1,008	714	714	729	752	668
% LT Debt	48.8	51.5	50.4	52.3	52.2	46.5	46.9	46.9	61.5	60.0
% Pfd.	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
% Common	0.65	0.69	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Common	974	955	895	887	980	804	754	703	631	555
% Common	49.5	47.8	46.9	47.0	45.4	62.5	45.6	44.2	43.2	34.8
Total Cap.	2,149	2,029	2,116	2,105	2,092	1,710	1,654	1,589	1,608	1,721
% Over. Ratio	92.3	93.2	93.0	91.1	94.2	89.8	95.8	96.0	93.3	94.7
% Return On Prop.	5.6	13.1	8.3	7.5	6.8	6.7	4.6	6.8	6.9	7.4
% Return On Invest. Capital	5.5	6.4	8.3	6.9	5.7	7.1	6.3	9.3	8.9	9.4
% Return On Invest. Equity	6.4	10.4	7.9	7.2	6.3	10.9	7.9	11.5	8.1	1.4
% Return On Com. Equity	6.4	16.8	11.1	10.3	11.3	10.3	9.8	10.8	12.4	NA

Data as of 9/05/03; per results of dec. operations; terms: Per share data as of 9/05/03; data derived from 1993-1999 period; figures rounded.

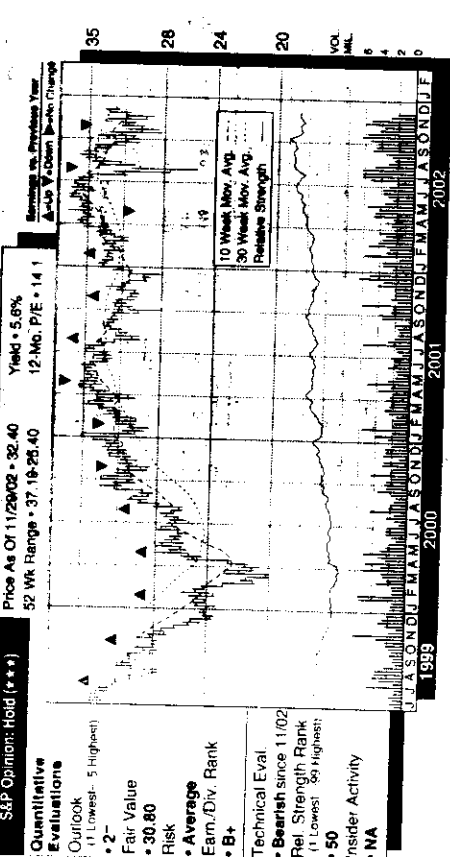
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STOCK REPORTS  
30-NOV-02  
Sub-Industry: Electric Utilities  
Summary: CIN is the holding company for Cincinnati Gas & Electric Co. and PSI Energy, serving more than 1.5 million electric and 495,000 gas customers in Indiana, Ohio and Kentucky.



- Quantitative Evaluations**
- Outlook: (1) Lowest; (5) Highest
  - 2-
  - Fair Value: 30.80
  - Risk: NA
  - Average: NA
  - Earn./Div. Rank: B+
- Technical Eval.**
- Bearish since 11/02
  - Rel. Strength Rank: (1) Lowest; (5) Highest
  - 50
  - Insider Activity: NA

**Key Stock Statistics**

S&P EPS Est. 2002	2.55	Targ. Bk. Value/Share	16.89
P/E on S&P Est. 2002	12.7	Beta	-0.06
S&P EPS Est. 2003	2.85	Shareholders	58,801
Dividend Rate/Share	1.80	Market cap. (B)	5.5
Shs. outstg. (M)	148.3	Incl. Holdings	61%
Avg. Daily Vol. (M)	0.865		

Value of \$10,000 Invested 5 years ago \$12.16!

**Fiscal Year Ending Dec. 31**

Revenues (Million \$)	2002	2001	2000	1999	1998	1997
1Q	2,204	3,707	1,583	1,402	1,332	1,030
2Q	2,490	3,642	1,770	1,276	1,072	885.3
3Q	3,888	3,324	2,300	1,782	1,976	1,355
4Q	—	2,250	2,770	1,478	1,394	1,102
Yr.	—	12,923	8,422	5,838	5,878	4,353

**Earnings Per Share (\$)**

1Q	0.58	0.75	0.37	0.40	0.67	0.72
2Q	0.36	0.51	0.47	0.37	-0.16	0.35
3Q	0.77	0.80	0.58	0.76	0.89	0.83
4Q	50.53	0.59	0.58	0.40	0.45	0.70
Yr.	—	52.35	2.78	2.50	2.53	1.85

**Next earnings report expected: late January**

**Dividend Data** (Dividends have been paid since 1853.)

Amount	Date	Ex-Div. Date	Stock of Record	Payment Date
0.450	Jan. 28	Jan. 31	Feb. 04	Feb. 15 '02
0.460	May 02	May 06	May 08	May 15 '02
0.460	Jul. 24	Aug. 01	Aug. 06	Aug. 15 '02
0.460	Sep. 30	Oct. 10	Oct. 15	Nov. 15 '02

**Overview - 22-AUG-02**

Operating EPS should increase around 2% in 2002, excluding one-time second quarter charges of \$0.25 related to CIN's early retirement and employee severance programs. The modest increase reflects a 6.5 million new shares issued to raise about \$200 million. In August 2001, the Ohio public utility commission approved an agreement that reduced the generation portion of CG&E's residential bills by 5% as of January 1, 2001, and froze its residential rates through the end of 2005. The agreement also authorized the transfer of CIN's generation assets to an unregulated subsidiary, and allowed it to recover its regulatory assets liabilities that can be charged to customers and other transition costs over 10 years. To comply with state and federal Clean Air Act requirements that begin in 2003, CIN's utilities agreed to invest, over a 15-year period, over \$1.3 billion in pollution control equipment aimed at reduction of nitrogen oxide (NOx) emissions.

**Valuation - 22-AUG-02**

We recommend holding CIN shares. The stock was recently up about 6% in 2002 (compared to a nearly 13% decrease for the S&P Index of Electric Utilities). This follows a 4.6% decline in 2001 (versus an 18.6% drop for that index). The increase in 2002 has been fueled in part by rumors related to CIN's appeal as a potential merger partner. In 2000, the stock recovered from a sharp 30% drop in 1999 (when the shares were hurt badly by CIN's default on its power contracts), and advanced over 46%, aided by favorable regulatory developments in Ohio. Cinergy should continue to benefit from modest customer growth and a well positioned gas distribution business. With the dividend yielding about 5.1%, and the stock trading at around 12X our 2002 operating EPS estimate of \$2.80, the shares are attractive for the income oriented investor.

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Cinergy Corp.

**Business Summary**

Cinergy Corp. is a holding company serving nearly 1.5 million electric and 495,000 gas customers in Indiana, Ohio and Kentucky. It was formed through the 1994 merger of Cincinnati Gas & Electric Co. and PSI Energy, Inc. Contributions to revenues by business segment in 2001 were: electric, 83.3% (2000, 83.3%); gas, 36.1% (2001, 34.9%), and other, 0.0% (2000, 0.0%).

In its early operating history, the SEC received jurisdiction over Cinergy's operations for three years. At the end of the three-year period, CIN was required to state how its operations would be managed and to file all relevant documents with the SEC. In August 2001, CIN filed its first annual report (10-K) with the SEC. The report included information about its operations, its financial performance, and its strategy for the future.

The SEC also received jurisdiction over CIN's operations in November 1998. The SEC approved CIN's plan of reorganization of the gas operations. CIN's plan of reorganization included the following:

- The gas operations were reorganized into two separate entities: Cincinnati Gas & Electric (CIN) and PSI Energy (PSI).
- CIN's gas operations were reorganized into two separate entities: Cincinnati Gas & Electric (CIN) and PSI Energy (PSI).
- PSI's gas operations were reorganized into two separate entities: Cincinnati Gas & Electric (CIN) and PSI Energy (PSI).

**Per Share Data (\$)**

Year Ended Dec. 31	2001	2000	1999	1998	1997	1996	1995	1994	1993
Tangible Bk. Val.	16.89	17.24	16.89	16.91	16.00	16.26	16.17	16.17	16.01
Earnings	2.55	2.55	2.55	2.55	2.28	2.00	2.22	2.22	1.80
Dividends	1.80	1.80	1.80	1.80	1.80	1.74	1.72	1.72	1.65
Payout Ratio	70.6%	70.6%	70.6%	70.6%	77.7%	87.0%	77.4%	77.4%	91.7%
Prices - High	35.00	35.25	34.87	30.87	30.12	34.25	31.12	27.75	28.58
Prices - Low	25.40	25.40	25.40	25.40	25.40	25.40	25.40	25.40	25.40
P/E Ratio - High	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
P/E Ratio - Low	8	8	8	8	8	8	8	8	8

**Income Statement Analysis (Million \$)**

Year Ended Dec. 31	2001	2000	1999	1998	1997	1996	1995	1994	1993
Revs.	12,923	8,422	5,838	5,878	4,353	3,853	3,081	2,850	1,583
Depn.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Maint.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Exp. Chgs.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Consol. Crdble	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Eff. Tax Rate	31%	31%	31%	31%	31%	31%	31%	31%	31%
Net Inc.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Balance Sheet & Other Financial Data	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

**Balance Sheet & Other Financial Data**

Year Ended Dec. 31	2001	2000	1999	1998	1997	1996	1995	1994	1993
Cap. Exp.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Net Prop.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Capitalization	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Lt Debt	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
% Lt Debt	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
% Pld	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Common	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total Cap.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
% Over Ratio	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
% Return on Invest.	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
% Return on Total Capital	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
% Return on Common Equity	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Data as of 12/31/01; all figures are estimates. For more information, see the company's annual report. All figures are in millions of dollars unless otherwise indicated.

**Registration**

Cinergy Corp. is registered with the SEC under the Securities Act of 1933 and the Securities Exchange Act of 1934. The company's common stock is listed on the New York Stock Exchange under the symbol "CIN".

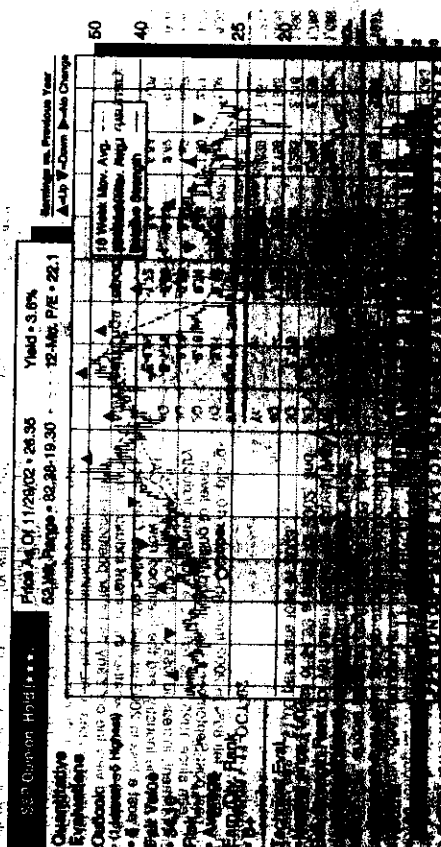


# Constellation Energy Group

NYSE Symbol: CEG

In S&P 500

**30-NOV-02** Sub-Industry: Electric Utilities  
Summary: This holding company owns energy-related businesses, including a North American wholesale power marketing and merchant generation business, and Baltimore Gas and Electric Co.



Quarter	Revenue	Operating Profit	Net Income	EPS	Dividend	Payout Ratio
Q1 2002	1,000	100	80	0.80	0.40	50%
Q2 2002	1,100	110	90	0.90	0.45	50%
Q3 2002	1,200	120	100	1.00	0.50	50%
Q4 2002	1,300	130	110	1.10	0.55	50%

Item	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Revenue	3,928	3,879	3,787	3,358	3,308	3,153	2,935	2,783	2,669	2,191
Operating Profit	410	470	430	377	343	330	317	296	237	223
Net Income	300	340	300	260	230	210	190	170	140	110
EPS	3.00	3.40	3.00	2.60	2.30	2.10	1.90	1.70	1.40	1.10

Constellation Energy Group is a holding company that owns and operates electric utilities and energy-related businesses. The company's primary assets are its subsidiaries, including Baltimore Gas and Electric Co. and Constellation Energy Services Inc. The company's revenue is primarily derived from the sale of electricity and natural gas.

# Constellation Energy Group, Inc.

STOCK REPORTS

**30-NOV-02** Business Summary - 27-NOV-02  
On October 26, 2001, Constellation Energy Group announced that it had canceled its plan (announced on October 23, 2000) to separate its businesses into two stand-alone publicly traded companies. The merchant energy business, which includes wholesale generation and power marketing, and the retail services business, which includes BGE (Baltimore Gas & Electric), will remain consolidated under a single holding company with two major lines of business. Also on October 26, the company announced the termination of its power advisory relationship with Goldman Sachs.

BGE is a utility that serves more than 1.1 million electric customers and around 600,000 gas customers in central Maryland. The local economy includes service businesses, heavy industry, and the Port of Baltimore. In 2001, the regulated electricity business accounted for 82% of revenue (65% in 2000); regulated gas, 17% (16%); merchant energy, 16% (14%); and other power-related businesses, 5% (8%).  
Electric revenue by customer class in 2001 was: commercial, 45.0% (45.1% in 2000); residential, 44.1% (45.0%); and industrial, 10.9% (9.9%).  
In April 1999, Maryland enacted legislation providing for all commercial and industrial customers with a choice of power supplier as of January 1, 2000. In November 1999, the Maryland Public Service Commission issued

Per Share Data (\$)	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Tangible Bk. Vn.	23.44	20.86	19.95	19.80	19.44	19.25	18.96	18.41	17.80	17.17
Earnings	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Dividends	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Payout Ratio	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%

Balance Sheet & Other Fin. Data (Million \$)	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Assets	11,982	10,442	9,988	8,744	8,495	8,190	7,979	7,792	7,359	6,947
Liabilities	1,318	1,079	938	838	803	773	748	723	683	648
Equity	10,664	9,363	9,050	7,906	7,692	7,417	7,231	7,069	6,676	6,299

Constellation Energy Group is a holding company that owns and operates electric utilities and energy-related businesses. The company's primary assets are its subsidiaries, including Baltimore Gas and Electric Co. and Constellation Energy Services Inc. The company's revenue is primarily derived from the sale of electricity and natural gas.



## STANDARD &amp; POOR'S

## Empire District Electric

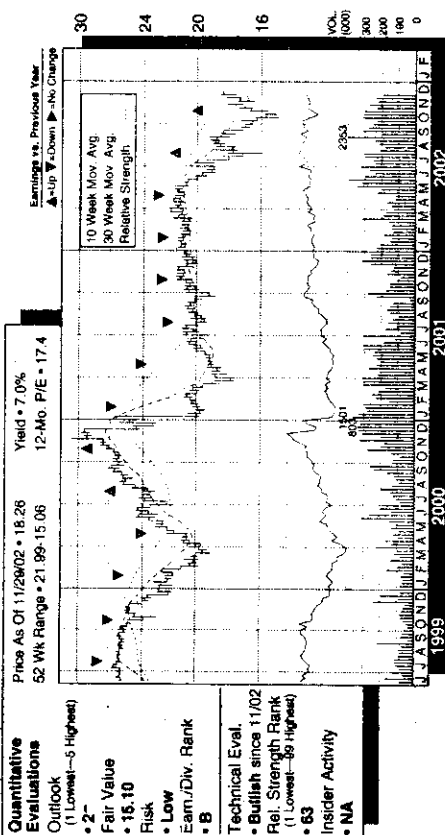
NYSE Symbol EDE

## STOCK REPORTS

## 30-NOV-02

Sub-Industry:  
Electric Utilities

Summary: EDE provides electric service to parts of Missouri, Kansas, Oklahoma and Arkansas, and also provides water service to three towns in Missouri.



## Business Profile - 03-SEP-02

The company attributed its strong second quarter results to an increase in Missouri rates granted by the Missouri Public Service Commission (MPSC) in September 2001, and the June 6, 2002, settlement with respect to Interim Energy Charge (IEC) refund provisions. Significantly lower gas prices and more favorable weather conditions in the second quarter of 2002, versus the second quarter of 2001, also boosted earnings. In July, a subsidiary of EDE joined with seven other investors to acquire the assets of the Precision Products Department of Eagle Picher Technologies, LLC. The newly formed company, Mid-America Precision Products, LLC, specializes in close tolerance custom manufacturing for the aerospace, electronics, telecommunications and machinery industries, including components for specialized batteries for Eagle Picher Technologies. EDE holds a 50% interest in Mid-America.

## Operational Review - 03-SEP-02

Revenues in the six months ended June 30, 2002, grew 12%, year to year, reflecting an increase in Missouri rates granted by the Missouri Public Service Commission in September 2001. Operating expenses were up only 2.1%, primarily reflecting lower purchased power costs; operating profit advanced 27%. With net other expense, versus other income, and a 22% rise in interest charges, net income was up 18%, to \$3,489,972 (\$0.17 a share, on 16% more shares), from \$2,948,062 (\$0.17).

## Stock Performance - 28-NOV-02

In the past 30 trading days, EDE's shares have increased 17%, compared to a 6% rise in the S&P 500. Average trading volume for the past five days was 46,950 shares, compared with the 40-day moving average of 57,787 shares.

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## STANDARD &amp; POOR'S

## The Empire District Electric Company

## STOCK REPORTS

## Business Summary - 03-SEP-02

Empire District Electric (EDE) generates, purchases, transmits, distributes and sells electricity in parts of Missouri, Kansas, Oklahoma and Arkansas. The company also provides water service to three towns in Missouri. In 2001, nearly all gross operating revenues came from electricity sales, with under 1% from water sales.

EDE's service territory consists of approximately 10,000 square miles and a population of more than 360,000, primarily throughout southwestern Missouri and smaller parts of southeastern Kansas, northeastern Oklahoma and northwestern Arkansas. In 2001, 86% of total retail electric revenues were earned in Missouri. Kansas, Oklahoma and Arkansas customers provided 6%, 3% and 3% of total electric revenues, respectively. In 2001, 42% of EDE's operating revenues came from residential customers. Commercial, industrial, wholesale and other customers provided 31%, 17%, 6% and 4%, respectively.

The company supplies electric service at retail to 119 incorporated communities, to various unincorporated areas, and at wholesale to four municipally owned distribution systems and two rural electric cooperatives. The largest urban area served is Joplin, MO, and its immediate vicinity, with a population of 157,000. EDE operates under franchises with original terms of 20 years or

longer in virtually all of the incorporated communities. About 51% of electric operating revenues in 2001 came from incorporated communities with franchises having at least 10 years remaining, and about 18% were from incorporated communities in which franchises have remaining terms of 10 years or less.

Based on kilowatt hours generated, coal was used to supply 70% of total fuel requirements. Natural gas supplied 29%, with oil generation providing less than 1%. EDE expects to increase the amount of gas used as a fuel source. Construction spending totaled about \$71.8 million in 2001. The company projects that construction spending will rise to \$72.2 million in 2002, and \$85.8 million in 2003.

The maximum hourly demand on the company's system reached a record high of 1,001 megawatts on August 9, 2001. The previous record peak of 993 megawatts was established in August 2000. EDE set a new maximum hourly winter demand of 941 megawatts on December 19, 2000.

In May 1999, EDE agreed to be acquired by Unicom, Inc., a Kansas City, MO-based electric and gas utility, for approximately \$800 million, including \$505 million in stock and cash and the assumption of \$260 million in debt. In January 2001, Unicom terminated the agreement, citing lack of receipt of necessary regulatory approvals.

## Per Share Data (\$)

(Year Ended Dec. 31)	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Tangible Bk. Val.	13.32	13.43	13.24	13.18	12.84	12.72	11.72	12.06	11.37	12.29
Earnings	0.59	1.35	1.13	1.53	1.29	1.23	1.18	1.32	1.16	1.26
Dividends	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.26
Payout Ratio	NM	95%	113%	84%	98%	104%	108%	97%	110%	100%
Prices - High	26.56	30.75	26.75	28.12	20.00	19.50	19.75	20.50	24.87	24.75
Prices - Low	17.50	18.93	20.68	18.37	15.75	17.12	15.87	15.00	19.12	20.12
P/E Ratio - High	45	23	24	17	16	16	17	16	21	20
P/E Ratio - Low	30	14	18	12	12	14	13	11	16	16

## Income Statement Analysis (Million \$)

	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Revs.	264	280	242	240	215	206	193	178	168	150
Depr.	29.5	27.8	26.4	25.0	23.4	21.6	19.9	18.3	17.4	16.5
Mainl.	19.1	14.8	16.3	17.5	12.8	13.7	12.8	10.8	10.6	10.3
Fxd. Chgs. Cov.	1.4	2.1	2.6	2.9	2.6	2.6	2.7	3.0	2.7	2.9
Constr. Credits	3.8	5.8	1.2	0.4	1.2	1.0	2.2	1.0	0.2	0.1
Eff. Tax Rate	14%	33%	42%	36%	35%	35%	35%	35%	33%	33%
Net Inc.	10.4	23.6	22.2	26.3	23.8	22.0	19.8	19.7	15.9	16.9

## Balance Sheet &amp; Other Fin. Data (Million \$)

	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Gross Prop.	1,100	1,049	920	858	810	757	699	657	587	547
Cap. Exp.	79.4	134	71.9	51.9	56.7	62.3	50.8	71.6	44.4	31.4
Net Prop.	750	720	616	572	547	515	476	446	394	367
Capitalization:										
LT Debt	359	326	346	246	196	220	195	185	165	144
% LT Debt	57	58	60	48	44	47	46	47	49	46
Pfd.	NM	NM	NM	32.6	32.9	32.9	32.9	32.9	32.9	32.9
% Pfd.	NM	NM	NM	6.42	7.30	7.10	7.60	8.40	2.30	2.50
Common	268	240	234	230	219	213	193	174	166	163
% Common	43	42	40	45	49	46	46	44	49	52
Total Cap.	718	657	657	591	527	540	491	459	406	376
% Oper. Ratio	82.4	82.2	80.0	80.1	80.9	82.2	82.8	82.0	82.6	80.0
% Earn. on Net Prop.	5.9	6.9	7.2	8.5	7.7	7.4	7.2	7.6	7.7	8.3
% Return On Revs.	3.9	9.1	9.2	11.8	11.1	10.7	10.3	11.1	9.5	11.2
% Return On Invest. Capital	7.1	7.9	6.8	11.2	10.1	9.4	7.0	7.5	7.5	8.1
% Return On Com. Equity	4.1	10.0	9.0	11.5	9.9	9.7	9.5	10.6	9.4	10.3

Data as orig report, but results of disc ops/spec. items. Per share data adj. for stk. divs. Bold denotes diluted EPS (FASB 128) prior periods restricted. E-Estimated. NA-Not Available. NM-Not Meaningful. NH-Not Ranked.

Office—202 Joplin St., Joplin, MO 64801. Tel—(417) 875-5100. Website—http://www.empiredistrict.com. Pres & CEO—W. L. Gibson. VP—Fin.—G. A. Knapp. Secy, Treas & Investor Contact—Janel S. Watson. (417) 825-5100 ext 2223. Dir.—M. F. Chubb Jr., W. L. Gibson, R. D. Hamrick, R. C. Hanley, J. Henschel, F. E. Jeffries, R. L. Lamm, J. S. Leon, M. W. MacDermey, M. P. Proulx. Transfer Agent & Registrar—Hudson Investor Services, South Hackensack, NJ. Incorporated—in Kansas in 1909. Engrg—616. S&P Analyst: Michael Infante/CBS







30-NOV-02

Sub-Industry:  
Electric Utilities

Summary: This company operates electric and gas utilities in New Mexico through Public Service Company of New Mexico, and sells wholesale power in the western U.S.

Quantitative  
Evaluations

Price As Of 11/29/02 • 23.60

52 Wk Range • 30.76-17.25

Yield • 3.7%

12-Mo. P/E • 16.2

Outlook  
(1 Lowest 5 Highest)

• Fair

• Fair Value  
• 26.40

• Risk

• Average

• Fairly Valued

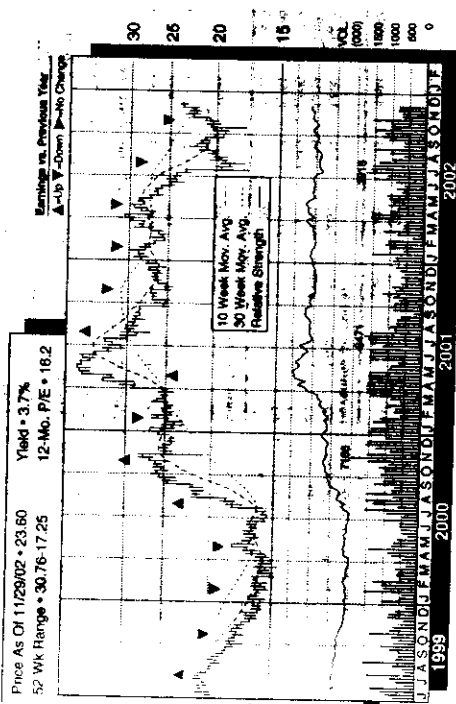
• Bullish since 10/02

• Rel. Strength Rank  
(1 Lowest - 39 Highest)

• 72

• Insider Activity

• NA



## Business Profile - 16-JUL-02

In July, PNM said continued weakness in the wholesale power market had led it to reduce its 2002 EPS estimate. The company projected operating EPS of \$1.90 to \$2.10 for the full year, with second quarter EPS of about \$0.25. Several factors, including an abundance of available hydropower from the Pacific Northwest, cooler weather through May and June, low natural gas prices, a number of new generating plants coming on line, and a continued slowdown in the regional economy all contributed to holding down power prices in 2002. To preserve its financial position, PNM intends to control expenses and limit capital spending. Construction expenditures for 2002, originally budgeted at \$381 million, have been reduced to \$240 million.

## Operational Review - 16-JUL-02

Total operating revenues in the first quarter of 2002 declined 57%, year to year, as electric and gas revenues fell 63% and 43%, respectively. Profitability was hurt by a weak regional economy and mild weather in the western U.S. that reduced prices for power well below the 2001 level. Wholesale revenues averaged \$24 per megawatt hour, down from an average of \$135. Despite the absence of nonrecurring losses that reduced EPS by \$0.16, net income dropped 61%, to \$24.9 million (\$0.63 a share, after preferred dividends), from \$63.6 million (\$1.60).

## Stock Performance - 29-NOV-02

In the past 30 trading days, PNM's shares have increased 16%, compared to a 6% rise in the S&P 500. Average trading volume for the past five days was 197,725 shares, compared with the 40-day moving average of 227,367 shares.

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## Key Stock Statistics

Dividend Rate/Share	0.88	Shareholders	15,360
Div. Yield (%)	3.71	Market cap. (\$)	\$0.28
Avg. daily vol. (M)	0.159	Infl. Holdings	82%
Temp. Bk. Value/Share	28.17		
Book	0.58		
Value of \$10,000 Invested 5 years ago: \$33,870			
Fiscal Year Ending Dec. 31			
Revenues (Million \$)	1999	2000	1997
1Q	314.0	272.8	299.8
2Q	284.6	273.2	280.0
3Q	284.6	273.2	280.0
4Q	284.6	273.2	280.0
Yr.	2,352	1,511	1,082

Earnings Per Share (\$)			
1Q	0.83	0.58	0.81
2Q	0.28	0.45	0.28
3Q	0.48	0.82	0.82
4Q	0.11	0.38	0.44
Yr.	3.77	2.33	2.28
Next earnings report expected: late January			
Dividend Data (Dividends have been paid since 1998.)			
Amount	Date	Ex-Div. Date	Payment Date
0.200	Dec. 11	Jan. 31	Feb. 15 '02
0.220	Feb. 19	Apr. 30	May 17 '02
0.220	Jul. 17	Jul. 31	Aug. 16 '02
0.220	Oct. 01	Oct. 31	Nov. 15 '02

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## STOCK REPORTS

## PNM Resources, Inc.

on sales to meet requirements. The third market consists of contract sales to third parties. PNM's contract sales are sold to third parties at a discount to the amount of the contract sales. PNM's contract sales are sold to third parties at a discount to the amount of the contract sales. PNM's contract sales are sold to third parties at a discount to the amount of the contract sales.

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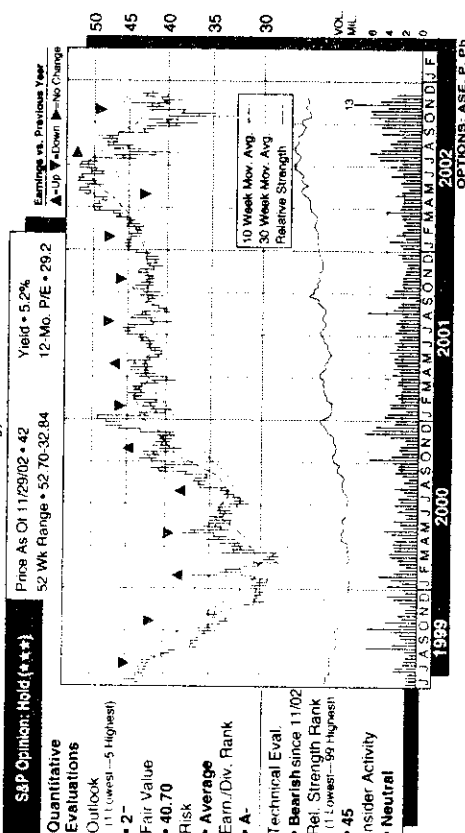
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**Stock Reports**

**330-NOV-02** Sub-Industry: Electric Utilities  
Summary: This holding company was renamed after the acquisition of St. Petersburg-based Florida Progress Corp. by Raleigh-based CP&L Energy.



Overview - 24-OCT-02

After an anticipated 15% advance in 2002 operating EPS from 2001 operating EPS of \$3.40, we expect EPS to increase about 3% in 2003. Our operating EPS estimate for 2002 includes about \$0.45 from the elimination of goodwill amortization, but does not include a third quarter \$1.04 writedown of the company's telecommunications investments. The sale of North Carolina Natural Gas is expected to close in mid-2003, with net proceeds to be used to pay down debt. Tax adjustments related to PGN's synthetic fuel investments reduced EPS by \$0.27 in the second quarter of 2002, but this will be reversed by the end of the year. With the acquisition of Florida Progress, the company subsequently changed its name from CP&L Energy to Progress Energy. PGN more than doubled its customer base (to 2.5 million) and annual revenues (to over \$8 billion). The company has become one of the 10 largest U.S. energy utilities (based on generating capacity).

## Valuation - 24-OCT-02

Although the shares were recently down about 10% in 2002, they have performed relatively well in comparison to a far steeper decline for their electric utility peers. In fact, at the beginning of 2000, the stock has outperformed industry peers since the beginning of 2000. With net proceeds from the sale of North Carolina Natural Gas being used to reduce its debt, PCN is intent on strengthening its balance sheet and since it has only a solid investment grade credit rating, once it has only a long maturity schedule over the next few years, it will probably not need to issue any additional long-term debt. With the stock trading at about \$40.00, our 2003 operating EPS estimate of \$4.05, we expect our most modest price appreciation for the shares. However, with the dividend expected to grow at an annual rate of about 3% yielding over 5%, the stock is attractive for income-oriented investors.

Key Stock Statistics		Fiscal Year Ending Dec. 31				
		2000	2001	2000	1999	1997
SAP EPS Est. 2002	3.90					
P/E on S&P Est. 2002	10.9					
SAP EPS Est. 2003	2.18					
Dividend Rate/Share	3.95					
Shs. outg. (M)	222.2					
Avg. daily Vol. (\$100)	1,245					
Value of \$10,000 invested 5 years ago: \$14,456						
Revenues (Million \$)						
10	1,886	1,908	877.1	762.9	752.3	716.1
20	2,036	2,316	992.3	762.8	736.1	666.0
30	2,353	2,331	1,084	1,025	946.2	906.8
40	—	1,907	1,285	806.1	695.4	735.1
50	—	847	1,119	3,358	3,130	3,024

Next earnings report expected: late January									
Dividend Data (Dividends have been paid since 1937.)									
	Amount	Date	Ex-Div.	Stock of	Payment				
	\$)	Decl.	Date	Record	Date				
Earnings Per Share (\$)									
1937	0.82	0.77	0.56	0.63	0.60	0.56			
1938	0.70	0.56	0.56	0.70	0.43	0.45			
1939	0.70	0.70	1.77	1.93	1.28	1.15			
1940	1.00	0.70	1.77	1.93	0.61	0.42	0.58		
1941	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1942	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1943	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1944	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1945	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1946	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1947	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1948	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1949	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1950	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1951	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1952	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1953	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1954	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1955	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1956	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1957	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1958	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1959	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1960	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1961	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1962	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1963	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1964	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1965	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1966	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1967	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1968	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1969	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1970	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1971	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1972	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1973	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1974	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1975	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1976	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1977	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1978	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1979	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1980	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1981	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1982	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1983	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1984	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1985	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1986	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1987	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1988	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1989	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1990	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1991	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1992	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1993	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1994	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1995	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1996	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1997	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1998	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
1999	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2000	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2001	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2002	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2003	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2004	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2005	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2006	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2007	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2008	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2009	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2010	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2011	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2012	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2013	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2014	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2015	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2016	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2017	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2018	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2019	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2020	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2021	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2022	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2023	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2024	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2025	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2026	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2027	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2028	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2029	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2030	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2031	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2032	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2033	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2034	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2035	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2036	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2037	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2038	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2039	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2040	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2041	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2042	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2043	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2044	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2045	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2046	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2047	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2048	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2049	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2050	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2051	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2052	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2053	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2054	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2055	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2056	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2057	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2058	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2059	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2060	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2061	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2062	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2063	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2064	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2065	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2066	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2067	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2068	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2069	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2070	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2071	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2072	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2073	1.00	0.70	1.77	1.93	0.57	0.51	0.42	0.58	
2074	1.00</								

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8

**STOCK REPORTS**  
**Business Summary - 24-OCT-02**

The company (formerly CP&L Energy) changed its name to Progress Energy, Inc. in December 2000. On November 30, 2000, the company acquired Florida Power and Light Co. (FPL) for about \$5.4 billion in cash. On October 30, 2000, the company acquired Gulf Coast Florida Power and Light Co. (GFC) for about \$1.1 billion in cash. On August 1, 2000, the company acquired Carolina Power & Light Co. (now operating as CP&L), a utility providing electricity to 1.3 million customers in eastern and western North Carolina and central South Carolina, and, after the July 1999 acquisition of North Carolina Natural Gas (through the assumption of about \$354 million in stock), natural gas to 176,000 customers in eastern and southern North Carolina. On October 16, 2002, PGN announced an agreement to sell North Carolina Natural Gas for \$425 million in cash. The sale is expected to close in mid-2003.

Following the FPC acquisition, the holding company was organized into five primary units: Energy Delivery, which oversees transmission and distribution operations for Carolina Power & Light and Florida Power; Energy Supply, which oversees generation operations; energy trading and system planning; Progress Ventures, which

## STOCK REPORTS

**Business Summary - 24-OCT-02**

is involved in merchant generation ownership, wholesale energy marketing and trading operation, and fuel extraction, manufacturing and delivering; Energy Services, which oversees NCG and energy management services; and a Service Company to support the combined company.

In 2001, the electric revenues accounted for 77.5% of PGN's consolidated revenues; the diversified businesses, 18.7%; and the natural gas operations, 3.8%. Carolina Power & Light received authorization from the North Carolina Utility Commission (in December 1998) and the South Carolina Public Service Commission (in January 1999) to accelerate the amortization of its nuclear generating assets, effective from January 1, 2000, through 2004. Annual amortization will range from \$106 million to \$150 million, for a total of \$750 million.

The company's subsidiaries include Protonet Telecom, a super-regional access network that connects customers to the Internet and other services across five states, from New York to Miami, and gateways to Latin America, Canada, which provides long-haul telecommunications services; and Protonet Rail Services, which supplies railroad and transit system products and services. PGN also has a 100% interest in Strategic Resources (SRS), which specializes in facilities and energy management software, systems and services.

Per Share Data (\$)		Year Ended Dec. 31									
		2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
1	Long-Term Debt	10,58	7 48	19 43	19 20	18 19	17 16	16 36	15 95	15 86	15 36
2	Preferred Div.	2 64	3 03	2 55	2 75	2 66	2 66	2 48	2 03	2 10	2 36
3	Common Div.	2 12	2 06	2 00	1 94	1 89	1 76	1 78	1 70	1 64	1 56
4	Dividend Payout Ratio	80%	68%	78%	71%	71%	68%	71%	84%	78%	67%
5	Return on Assets	49 25	49 37	47 87	49 62	42 68	38 75	34 82	30 00	34 62	28 18
6	Return on Equity	38 78	38 25	29 25	39 18	32 75	33 75	28 12	22 50	27 00	24 43
7	Price/Earnings Ratio	19	16	19	18	16	15	14	15	16	12
8	Price/Book Value Ratio	15	9	11	14	12	13	11	11	13	10
<b>Income Statement Analysis (Million \$)</b>											
9	Revenue	8,461	4,119	3,358	3,130	3,024	2,996	3,007	2,877	2,895	2,767
10	Operating Expenses	1,090	740	496	487	482	387	364	368	414	398
11	Operating Income	NA	NA	NA	NA	NA	NA	NA	197	207	248
12	Operating Margin	1 8	2 6	4 2	4 5	4 3	4 1	3 7	3 4	3 2	3 2
13	Operating Chgs. Cov.	18 0	20 7	11 5	6 8	4 9	6 4	8 5	9 5	15 0	11 0
14	Operating Consol. Credits	NA	30%	40%	39%	38%	41%	39%	35%	33%	37%
15	Operating Tax Rate	47 8	38 2	39 9	38 8	39 1	37 3	31 3	34 6	3 0	3 0
16	Operating Income at Inc.	542	478	382	399	388	391	373	313	346	3 0
<b>Balance Sheet &amp; Other Fin. Data (Million \$)</b>											

	22/51	21/01	12/02	10/77	10/75	10/197	9/822	9/546	9/330	9/058
Gross Prop	22/51	21/01	12/02	10/77	10/75	10/197	9/822	9/546	9/330	9/058
up Exp.	1,216	960	1,86	527	450	457	344	301	389	334
Capitalization	12,445	11,617	7,257	6,300	6,294	6,400	6,329	6,349	6,432	6,426
IT Debt	9,577	5,983	3,028	2,614	2,416	2,526	2,610	2,531	2,585	2,675
L.T. Debt	61	52	47	46	46	47	49	48	48	50
Id.	Nil	Nil	59.4	59.4	59.4	144	144	144	144	144
Common	6,004	5,424	3,413	2,949	2,819	2,890	2,575	2,586	2,632	2,534
Common	39	48	52	52	53	50	48	49	49	47
Capital Cost	17,241	13,476	8,337	7,514	7,239	7,420	7,288	7,141	7,210	6,673
Oper. Ratio	83.5	87.1	82.4	79.3	80.6	82.8	82.3	84.7	83.8	80.4
Earn. on Net Prop.	10.3	7.6	12.1	10.2	8.9	8.1	8.4	7.0	7.3	8.4
Return on Net Prop.	6.4	11.6	11.4	12.8	12.8	13.1	12.4	10.9	12.0	13.7
Return on Invest. Capital	9.2	7.1	7.3	7.6	7.7	7.8	8.0	7.1	8.1	9.2
Return on Com. Equity	9.4	10.8	11.9	13.7	13.9	14.5	14.1	11.6	13.0	15.4

Estimated, E-Estimated; NA Not Available, NIM-Not Meaningful, NFR-Not Ranked.

Office—410 South Wilmington St., Raleigh, NC 27601-1748. Tel—(919) 546-8111. Website—<http://www.progress-energy.com>. **Chrom, Pres. & CO.—**W. Cavanaugh III, **Envr. & CFO—**M. Scott III, **VP.** A. Sacy, **W. D. Johnson, Investor Control—**Rubert F. Diemian Jr. (919-546-7474), **7-E-E-B.** B. Rorden, **D. L. Bivner, W. Cavanaugh III, C. S. Cover, R. L. Daugherty, W. D. Frederick Jr., W. O. McCoy, E. M. McKee, J. H. Mullin III, A. Nunn, C. A. Salazar, J. J. Wilson, J. G. Winner.** **Justus Agent & Registrar—**EquiSave Trust Co., Providence, RI. Incorporated—in-  
Canada, Canada in 1926. Empl—16,000. **SAP Analyst:** Justin McCann/PWW.





Rate  
 Rate of interest in money and capital markets  
 Federal Reserve System  
 Long-term or capital market  
 Government securities  
 Federal  
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 One-year  
 Not seasonally adjusted  
 Twelve months ending December

-----  
 YIELDS ON TREASURY SECURITIES AT CONSTANT, FIXED MATURITY ARE  
 CONSTRUCTED BY THE TREASURY DEPARTMENT, BASED ON THE MOST  
 ACTIVELY TRADED MARKETABLE TREASURY SECURITIES. YIELDS ON  
 THESE ISSUES ARE BASED ON COMPOSITE QUOTES REPORTED BY U.S.  
 GOVERNMENT SECURITIES DEALERS TO THE FEDERAL RESERVE BANK OF  
 NEW YORK. TO OBTAIN THE CONSTANT MATURITY YIELDS, PERSONNEL AT  
 TREASURY CONSTRUCT A YIELD CURVE EACH BUSINESS DAY AND YIELD  
 VALUES ARE THEN READ FROM THE CURVE AT FIXED MATURITIES.  
 -----

Released on 12/22/2003

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1962	3.10
1963	3.36
1964	3.85
1965	4.15
1966	5.20
1967	4.88
1968	5.69
1969	7.12
1970	6.90
1971	4.89
1972	4.95
1973	7.32
1974	8.20
1975	6.78
1976	5.88
1977	6.08
1978	8.34
1979	10.65
1980	12.00
1981	14.80
1982	12.27
1983	9.58
1984	10.91
1985	8.42
1986	6.45
1987	6.77
1988	7.65
1989	8.53
1990	7.89
1991	5.86
1992	3.89
1993	3.43
1994	5.32
1995	5.94
1996	5.52

Item 20, page 21

1997	5.63
1998	5.05
1999	5.08
2000	6.11
2001	3.49
2002	2.00

Item 20, page 22



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

21. In reference to the risk adjustment shown on page 54, line 11, explain in detail how the figures for KU and LG&E were derived. Provide all calculations, data, assumptions, etc. in reaching the conclusions indicated.

Answer:

See testimony, beginning on page 25 and continuing through page 42, line 2. The risk analysis was performed to compare KU and LG&E with the companies selected for obtaining data. Also refer to the testimony, page 52 beginning at line 22 and continuing page 54, line 3. The analysis was used to provide a basis for judging the risk differences and the adjustment needed for determining the cost of equity for KU and LG&E.



Responses of the Attorney General's Witness  
Carl G. K. Weaver to  
Commonwealth of Kentucky PSC Case No. 2003-00334  
And Case No. 2003-00335  
Louisville Gas and Electric Company's and Kentucky Utilities Company's  
Initial Requests for Information

22. Provide the attachment deriving the DCF model for various holding periods discussed at the bottom of page 7 of Dr. Weaver's Appendix II.

Answer:

Attached

*Ninth Edition*

# FINANCIAL MANAGEMENT

THEORY AND PRACTICE

EUGENE F. BRIGHAM

*University of Florida*

LOUIS C. GAPENSKI

*University of Florida*

MICHAEL C. EHRHARDT

*University of Tennessee*



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*Item 22, page 2*

SELF-TEST  
QUESTIONS

- Differentiate between a closely held corporation and a publicly owned corporation.
- Differentiate between a listed stock and an unlisted stock.
- Differentiate between primary and secondary markets.
- What is an IPO?

## COMMON STOCK VALUATION

Common stock represents an ownership interest in a corporation, but to the investor, a share of common stock is simply a piece of paper characterized by the following features:

1. It entitles its owner to dividends, but only if the company has earnings out of which dividends can be paid, and only if management chooses to pay dividends rather than retaining and reinvesting all the earnings. Whereas a bond contains a *promise* to pay interest, common stock provides no such promise—if you own a stock, you *expect* a dividend, but your expectations may not in fact be met. To illustrate, the Island Lighting Company (LILCO) had paid dividends on its common stock for more than 50 years, and people expected those dividends to continue. However, when the company encountered severe problems a few years ago, it stopped paying dividends. Note, though, that LILCO continued to pay interest on its bonds; if it had not, it would have been declared bankrupt, and the bondholders could potentially have taken over the company.
2. Stock can be sold at some future date, hopefully at a price greater than the purchase price. If the stock is actually sold at a price above its purchase price, the investor will receive a *capital gain*. Generally, at the time people buy common stocks, they do expect to receive capital gains; otherwise, they would not buy the stocks. However, after the fact, one can end up with capital losses rather than capital gains. LILCO's stock price dropped from \$17.50 to \$3.75 in one year, so the *expected* capital gain on that stock turned out to be a huge *actual* capital loss.

## Definitions of Terms Used in Stock Valuation Models

Common stocks provide an expected future cash flow stream, and a stock's value is found in the same manner as the values of other financial assets—namely, as the present value of the expected future cash flow stream. The expected cash flows consist of two elements: (1) the dividends expected in each year and (2) the price investors expect to receive when they sell the stock. The expected final stock price includes the return of the original investment plus an expected capital gain.

We saw in Chapter 1 that managers seek to maximize the values of their firm's stocks. A manager's actions affect both the stream of income to investors and the riskiness of that stream. Therefore, managers need to know how alternative actions are likely to affect stock prices. At this point we develop some models to help show how the value of a share of stock is determined. We begin by defining the following terms:

$D_t$  = dividend the stockholder *expects* to receive at the end of Year  $t$ .  $D_0$  is the most recent dividend, which has already been paid;  $D_1$  is the first dividend expected, and it will be paid at the end of this year;  $D_2$  is the dividend expected at the end of two years; and so forth.  $D_1$  represents the first cash flow a new purchaser of the stock will receive. Note that  $D_0$ , the dividend which has just been paid, is known with certainty. However, all future dividends



dividends are expected values, so the estimate of  $D_t$  may differ among investors.<sup>5</sup>

$P_0$  = actual **market price** of the stock today.

$\hat{P}_t$  = expected price of the stock at the end of each Year  $t$  (pronounced "P hat t").  $\hat{P}_0$  is the **intrinsic, or theoretical, value** of the stock today as seen by the particular investor doing the analysis;  $\hat{P}_1$  is the price expected at the end of one year; and so on. Note that  $\hat{P}_0$  is the intrinsic value of the stock today based on a particular investor's estimate of the stock's expected dividend stream and the riskiness of that stream. Hence, whereas the market price  $P_0$  is fixed and is identical for all investors,  $\hat{P}_0$  could differ among investors depending on how optimistic they are regarding the company. The caret, or "hat," is used to indicate that  $\hat{P}_t$  is an estimated value.  $\hat{P}_0$ , the individual investor's estimate of the intrinsic value today, could be above or below  $P_0$ , the current stock price, but an investor would buy the stock only if his or her estimate of  $\hat{P}_0$  were equal to or greater than  $P_0$ .

Since there are many investors in the market, there can be many values for  $\hat{P}_0$ . However, we can think of a group of "average," or "marginal," investors whose actions actually determine the market price. For these marginal investors,  $P_0$  must equal  $\hat{P}_0$ ; otherwise, a disequilibrium would exist, and buying and selling in the market would change  $P_0$  until  $P_0 = \hat{P}_0$  for a marginal investor.

$g$  = expected **growth rate** in dividends as predicted by a marginal investor. If dividends are expected to grow at a constant rate,  $g$  is also equal to the expected rate of growth in earnings and in the stock's price. Different investors may use different  $g$ 's to evaluate a firm's stock, but the market price,  $P_0$ , is set on the basis of the  $g$  estimated by marginal investors.

$k_s$  = minimum acceptable, or **required rate of return**, on the stock, considering both its riskiness and the returns available on other investments. Again, this term generally relates to marginal investors. The determinants of  $k_s$  include the real rate of return, expected inflation, and risk premiums, as discussed in Chapter 5.

$\hat{k}_s$  = **expected rate of return** which an investor who buys the stock expects to receive.  $\hat{k}_s$  (pronounced "k hat s") could be above or below  $k_s$ , but one would buy the stock only if  $\hat{k}_s$  were equal to or greater than  $k_s$ .

$\bar{k}_s$  = **actual, or realized, after-the-fact rate of return**, pronounced "k bar s." You may expect to obtain a return of  $\hat{k}_s = 15$  percent if you buy Exxon stock today, but if the market goes down, you may end up next year with an actual realized return that is much lower, perhaps even negative.

$D_1/P_0$  = expected **dividend yield** on the stock during the coming year. If the stock is expected to pay a dividend of  $D_1 = \$1$  during the next 12 months, and if its current price is  $P_0 = \$10$ , then the expected dividend yield is  $\$1/\$10 = 0.10 = 10\%$ .

<sup>5</sup>Stocks generally pay dividends quarterly, so theoretically we should evaluate them on a quarterly basis. However, in stock valuation, most analysts work on an annual basis because the data generally are not precise enough to warrant refinement to a quarterly model. For additional information on the quarterly model, see Charles M. Linke and J. Kenton Zumwalt, "Estimation Biases in Discounted Cash Flow Analysis of Equity Capital Cost in Rate Regulation," *Financial Management*, Autumn 1984, 15-21.

$\frac{\hat{P}_1 - P_0}{P_0}$  = expected **capital gains yield** on the stock during the coming year.  
 stock sells for \$10 today, and if it is expected to rise to \$10.50 at the  
 end of one year, then the expected capital gain is  $\hat{P}_1 - P_0 = \$10.50 - \$10.00 = \$0.50$ , and the expected capital gains yield is  $\$0.50 / \$10.00 = 0.05 = 5\%$ .

Expected =  $\hat{k}_s$  = expected dividend yield ( $D_1/P_0$ ) plus expected capital gains  
 total  $[(\hat{P}_1 - P_0)/P_0]$ . In our example, the **expected total return** =  $\hat{k}_s = 10\% + 5\% = 15\%$ .

### Expected Dividends as the Basis for Stock Values

In our discussion of bonds in Chapter 8, we found the value of a bond as the present value of interest payments over the life of the bond plus the present value of the bond's maturity (or par) value:

$$V_B = \frac{INT}{(1 + k_d)^1} + \frac{INT}{(1 + k_d)^2} + \cdots + \frac{INT}{(1 + k_d)^N} + \frac{M}{(1 + k_d)^N}$$

Stock prices are likewise determined as the present value of a stream of cash flows, and the basic stock valuation equation is similar to the bond valuation equation. What are the cash flows that corporations provide to their stockholders? First, think of yourself as an investor who buys a stock with the intention of holding it (in your family) forever. In this case, all that you (and your heirs) will receive is a stream of dividends, and the value of the stock today is calculated as the present value of an infinite stream of dividends:

Value of stock =  $\hat{P}_0$  = PV of expected future dividends

$$\begin{aligned} &= \frac{D_1}{(1 + k_s)^1} + \frac{D_2}{(1 + k_s)^2} + \cdots + \frac{D_\infty}{(1 + k_s)^\infty} \\ &= \sum_{t=1}^{\infty} \frac{D_t}{(1 + k_s)^t} \end{aligned} \quad (9-1)$$

What about the more typical case, where you expect to hold the stock for a finite period and then sell it—what will be the value of  $\hat{P}_0$  in this case? Unless the company is likely to be liquidated and thus to disappear, *the value of the stock is again determined by Equation 9-1*. To see this, recognize that for any individual investor, the expected cash flows consist of expected dividends plus the expected sale price of the stock. However, the sale price the current investor receives will depend on the dividends some future investor expects. Therefore, for all present and future investors in total, expected cash flows must be based on expected future dividends. Put another way, unless a firm is liquidated or sold to another concern, the cash flows it provides to its stockholders will consist only of a stream of dividends. Therefore, the value of a share of its stock must be established as the present value of that expected dividend stream.

The general validity of Equation 9-1 can also be confirmed by asking the following question: Suppose I buy a stock and expect to hold it for one year. I will receive dividends during the year plus the value  $\hat{P}_1$  when I sell out at the end of the year. But what will determine the value of  $\hat{P}_1$ ? The answer is that it will be determined as the present value of the dividends expected during Year 2 plus the stock price at the end of that year, which, in turn, will be determined as the present value of another set of future

dividends and an even more distant stock price. This process can be continued ad infinitum, and the ultimate result is Equation 9-1.<sup>6</sup>

Equation 9-1 is a generalized stock valuation model in the sense that the time pattern of  $D_t$  can be anything:  $D_t$  can be rising, falling, or constant, it can be fluctuating randomly, or it can even be zero for several years, and Equation 9-1 will still hold. Often, however, the projected stream of dividends is expected to follow a systematic pattern, in which case we can develop a simplified (that is, easier to evaluate) version of the stock valuation model expressed in Equation 9-1. In the following sections, we consider the cases of zero growth, constant growth, and nonconstant growth.

### Stock Values with Zero Growth

Suppose dividends are not expected to grow at all but to remain constant. Here we have a **zero growth stock**, for which the dividends expected in future years are equal to some constant amount—that is,  $D_1 = D_2 = D_3$  and so on. Therefore, we can drop the subscripts on  $D$  and rewrite Equation 9-1 as follows:

$$\hat{P}_0 = \frac{D}{(1 + k_s)^1} + \frac{D}{(1 + k_s)^2} + \cdots + \frac{D}{(1 + k_s)^\infty} \quad (9-1a)$$

As we noted in Chapter 7 in connection with the British consol bond, a security that is expected to pay a constant amount each year forever is called a *perpetuity*. *Therefore, a zero growth stock is a perpetuity.*

Although a zero growth stock is expected to provide a constant stream of dividends into the indefinite future, each dividend has a smaller present value than the preceding one, and as the years get very large, the present value of the future dividends approaches zero. To illustrate, suppose  $D = \$1.15$  and  $k_s = 13.4\%$ . We can rewrite Equation 9-1a as follows:

$$\begin{aligned} \hat{P}_0 &= \frac{\$1.15}{(1.134)^1} + \frac{\$1.15}{(1.134)^2} + \frac{\$1.15}{(1.134)^3} + \cdots + \frac{\$1.15}{(1.134)^{50}} + \cdots + \frac{\$1.15}{(1.134)^{100}} + \cdots \\ &= \$1.01 + \$0.89 + \$0.79 + \cdots + \$0.002 + \cdots + \$0.000004 + \cdots \end{aligned}$$

We can also show the zero growth stock in graph form, as in Figure 9-1. The horizontal line shows the constant dividend stream,  $D_t = \$1.15$ . The descending step function curve shows the present value of each future dividend. If we extended the analysis on out to infinity and then summed the present values of all the future dividends, the sum would be equal to the value of the stock.

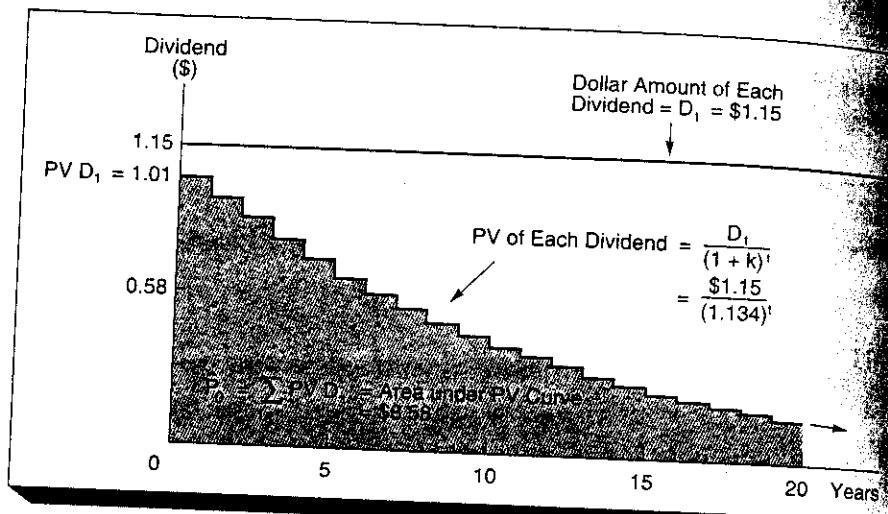
As we saw in Chapter 7, the value of any perpetuity is simply the payment divided by the discount rate, so the value of a zero growth stock reduces to this formula:

$$\hat{P}_0 = \frac{D}{k_s} \quad (9-2)$$

<sup>6</sup>We should note that investors periodically lose sight of the long-run nature of stocks as investments and forget that in order to sell a stock at a profit, one must find a buyer who will pay the higher price. If you analyzed a stock's value in accordance with Equation 9-1, concluded that the stock's market price exceeded a reasonable value, and then bought the stock anyway, then you would be following the "bigger fool" theory of investment—you think that you may be a fool to buy the stock at its excessive price, but you also think that when you get ready to sell it, you can find someone who is an even bigger fool. The bigger fool theory was widely followed in the summer of 1987, just before the stock market lost more than one-third of its value in the October 1987 crash. Many people think it is back in vogue now, in 1998.

FIGURE 9-1

Present Values of Dividends of a Zero Growth Stock (Perpetuity)



Therefore, the value of our illustrative stock is \$8.58:

$$\hat{P}_0 = \frac{\$1.15}{0.134} = \$8.58.$$

If you extended Figure 9-1 on out forever and then added up the present value of each individual dividend, you would end up with the intrinsic value of the stock, \$8.58.<sup>7</sup> The actual market price of the stock,  $P_0$ , could be greater than, less than, or equal to \$8.58, depending on other investors' perceptions of the dividend pattern and riskiness of the stock.

We could transpose the  $\hat{P}_0$  and the  $k_s$  in Equation 9-2 and solve for  $k_s$  to produce Equation 9-3:

$$\hat{k}_s = \frac{D}{P_0} \quad (9-3)$$

We could then look up the price of the stock and the latest dividend,  $P_0$  and  $D$ , in the newspaper, and  $D/P_0$  would be the rate of return we could expect to earn if we bought the stock. Since we are dealing with an *expected rate of return*, we put a "hat" on the  $k$  value. Thus, if we bought the stock at a price of \$8.58 and expected to receive a constant dividend of \$1.15, our expected rate of return would be

$$\hat{k}_s = \frac{\$1.15}{\$8.58} = 0.134 = 13.4\%.$$

<sup>7</sup>If you think that having a stock pay dividends forever is unrealistic, then think of it as lasting only for 50 years. Here you would have an annuity of \$1.15 per year for 50 years discounted at 13.4 percent. Enter  $N = 50$ ,  $I = 13.4$ , and  $PMT = 1.15$ , and then press PV to find the value of the annuity. It is \$8.57, which differs by only a penny from that of the perpetuity. Thus, the dividends from Years 51 to infinity contribute almost nothing to the value of the stock.

### Normal, or Constant, Growth

Although the zero growth model is applicable to a few companies, the earnings and dividends of most companies are expected to increase over time. Expected growth rates vary from company to company, but dividend growth on average is expected to continue in the foreseeable future at about the same rate as that of the nominal gross domestic product (real GDP plus inflation). On this basis, one might expect the dividend of an average, or "normal," company to grow at a rate of 6 to 8 percent a year. Thus, if a **normal, or constant, growth** company's last dividend, which has already been paid, was  $D_0$ , its dividend in any future Year  $t$  may be forecasted as  $D_t = D_0(1 + g)^t$ , where  $g$  is the constant expected rate of growth. For example, if MicroDrive just paid a dividend of \$1.15 (that is,  $D_0 = \$1.15$ ), and if investors expect an 8 percent growth rate, then the estimated dividend one year hence would be  $D_1 = \$1.15(1.08) = \$1.24$ ;  $D_2$  would be \$1.34; and the estimated dividend five years hence would be

$$D_t = D_0(1 + g)^t = \$1.15(1.08)^5 = \$1.69.$$

Using this method for estimating future dividends, we can determine the current stock value,  $\hat{P}_0$ , using Equation 9-1 as set forth previously—in other words, we can find the expected future cash flow stream (the dividends), then calculate the present value of each dividend payment, and finally sum these present values to find the value of the stock. Thus, the intrinsic value of the stock is equal to the present value of its expected future dividends.

If  $g$  is constant, Equation 9-1 may be rewritten as follows:<sup>8</sup>

$$\begin{aligned}\hat{P}_0 &= \frac{D_0(1+g)^1}{(1+k_s)^1} + \frac{D_0(1+g)^2}{(1+k_s)^2} + \dots + \frac{D_0(1+g)^\infty}{(1+k_s)^\infty} \\ &= D_0 \sum_{t=1}^{\infty} \frac{(1+g)^t}{(1+k_s)^t} \\ &= \frac{D_0(1+g)}{k_s - g} = \frac{D_1}{k_s - g}\end{aligned}\quad (9-4)$$

Inserting values into Equation 9-4, we find the value of our illustrative stock to be \$23.00:

$$\hat{P}_0 = \frac{\$1.15(1.08)}{0.134 - 0.08} = \frac{\$1.242}{0.054} = \$23.00.$$

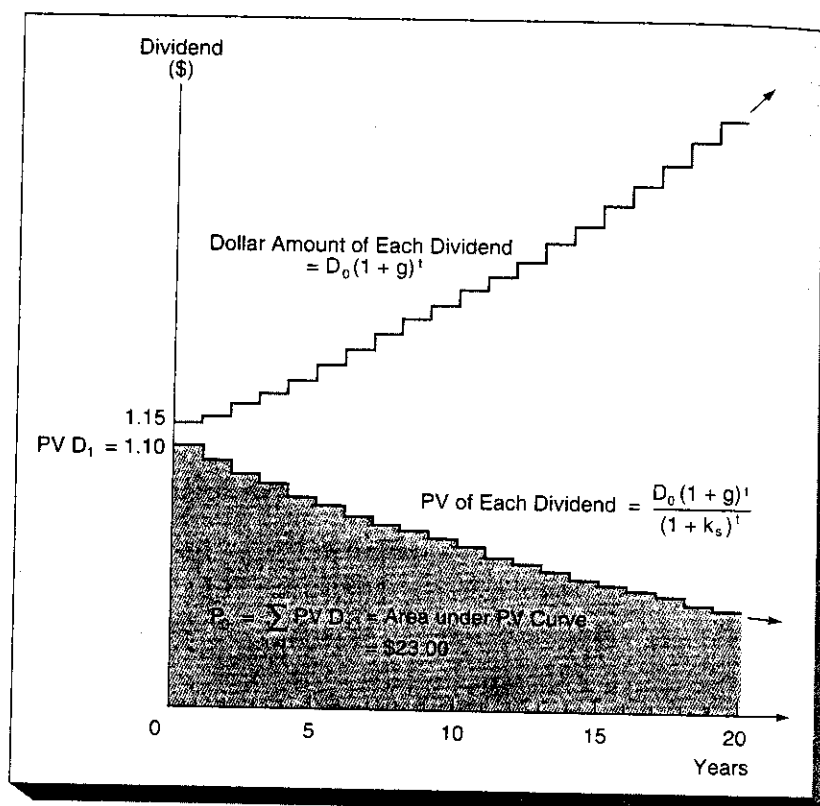
The **constant growth model** as set forth in the last term of Equation 9-4 is often called the Gordon Model, after Myron J. Gordon, who did much to develop and popularize it.

Note that Equation 9-4 is sufficiently general to encompass the zero growth case described earlier: If growth is zero, this is simply a special case of constant growth, and Equation 9-4 is equal to Equation 9-2. Note also that a necessary condition for the derivation of Equation 9-4 is that  $k_s$  be greater than  $g$ . Look back at the second form of Equation 9-4. If  $g$  is larger than  $k_s$ , then  $(1+g)^t/(1+k_s)^t$  must always be greater than one. In this case, Equation 9-4 is the sum of an infinite number of terms, with each term being a number larger than one. Therefore, if the constant  $g$  were greater than  $k_s$ , the resulting stock price would be infinite! Since no company is worth an infinite price, it is impossible to have a constant growth rate that is greater than  $k_s$ . So, if you try to

<sup>8</sup>The last form of Equation 9-4 is derived in Appendix 4A of Eugene F. Brigham and Louis C. Gapenski, *Intermediate Financial Management*, 5th ed. (Fort Worth, Tex.: Dryden Press, 1996). In essence, Equation 9-4 is the sum of a geometric progression, and the final result is the solution value of the progression.

FIGURE 9-2

Present Values of Dividends of a Constant Growth Stock:  
 $D_0 = \$1.15$ ,  $g = 8\%$ ,  $k_s = 13.4\%$



use the constant growth model in a situation where  $g$  is greater than  $k_s$ , you will violate laws of economics and mathematics, and your results will be both wrong and meaningless.

The concept underlying the valuation process for a constant growth stock is graphed in Figure 9-2. Dividends are growing at the rate  $g = 8\%$ , but because  $k_s > g$ , the present value of each future dividend is declining. For example, the dividend in Year 1 is  $D_1 = D_0(1 + g)^1 = \$1.15(1.08) = \$1.242$ . However, the present value of this dividend, discounted at 13.4 percent, is  $PV(D_1) = \$1.242/(1.134)^1 = \$1.095$ . The dividend expected in Year 2 grows to  $\$1.242(1.08) = \$1.341$ , but the present value of this dividend falls to  $\$1.04$ . Continuing,  $D_3 = \$1.449$  and  $PV(D_3) = \$0.993$ , and so on. Thus, the expected dividends are growing, but the present value of each successive dividend is declining, because the dividend growth rate (8%) is less than the rate used for discounting the dividends to the present (13.4%).

If we summed the present values of each future dividend, this summation would be the value of the stock,  $\hat{P}_0$ . When  $g$  is a constant, this summation is equal to  $D_1/(k_s - g)$ , as shown in Equation 9-4. Therefore, if we extended the lower step function curve in Figure 9-2 on out to infinity and added up the present values of each future dividend, the summation would be identical to the value given by Equation 9-4, \$23.00.

Growth in dividends occurs primarily as a result of growth in *earnings per share* (EPS). Earnings growth, in turn, results from a number of factors, including (1) infla-

tion, (2) the amount of earnings the company retains and reinvests, and (3) the rate of return the company earns on its equity (ROE). Regarding inflation, if output (in units) is stable, but both sales prices and input costs rise at the inflation rate, then EPS will also grow at the inflation rate. Even without inflation, EPS will also grow as a result of the reinvestment, or plowback, of earnings. If the firm's earnings are not all paid out as dividends (that is, if some fraction of earnings is retained), the dollars of investment behind each share will rise over time, and that should lead to growth in earnings and dividends.

Even though a stock's value is derived from expected dividends, this does not necessarily mean that corporations can increase their stock prices by simply raising the current dividend. Shareholders care about *all* dividends, both current and those expected in the future. Moreover, there is a trade-off between current dividends and future dividends. Companies that pay high current dividends have less money to retain and reinvest in the business, and that lowers the rate of growth in earnings and dividends. So, the issue is this: Do shareholders prefer higher current dividends at the cost of a slower rate of growth in dividends, the reverse, or are stockholders indifferent? As we will see in Chapter 17, there is no simple answer to this question. Shareholders prefer to have the company retain earnings, hence pay less current dividends, if it has highly profitable investment opportunities, but they want the company to pay earnings out if its investment opportunities are poor. Taxes also play a role, as dividends and capital gains are taxed differently, so dividend policy affects investors' taxes. We will consider dividend policy in detail in Chapter 17.

### Do Stock Prices Reflect Long-Term or Short-Term Events?

Managers often complain that the stock market is shortsighted and that it cares only about next quarter's performance. Let's use the constant growth model to test this assertion. MicroDrive's most recent dividend was \$1.15, and it is expected to grow at a rate of 8 percent per year. Since we know the growth rate, we can forecast the dividends for each of the next five years and then find their present values:

$$\begin{aligned}
 PV &= \frac{D_0(1+g)^1}{(1+k_s)^1} + \frac{D_0(1+g)^2}{(1+k_s)^2} + \frac{D_0(1+g)^3}{(1+k_s)^3} + \frac{D_0(1+g)^4}{(1+k_s)^4} + \frac{D_0(1+g)^5}{(1+k_s)^5} \\
 &= \frac{\$1.15(1.08)^1}{(1.134)^1} + \frac{\$1.15(1.08)^2}{(1.134)^2} + \frac{\$1.15(1.08)^3}{(1.134)^3} + \frac{\$1.15(1.08)^4}{(1.134)^4} + \frac{\$1.15(1.08)^5}{(1.134)^5} \\
 &= \frac{\$1.242}{(1.134)^1} + \frac{\$1.341}{(1.134)^2} + \frac{\$1.449}{(1.134)^3} + \frac{\$1.565}{(1.134)^4} + \frac{\$1.690}{(1.134)^5} \\
 &= 1.095 + 1.043 + 0.993 + 0.946 + 0.901 \\
 &\approx \$5.00.
 \end{aligned}$$

Recall that MicroDrive's stock price is \$23.00. Therefore, only \$5.00, or 22 percent, of the \$23.00 stock price is attributable to short-term cash flows. This means that MicroDrive's managers will have a bigger impact on the stock price if they work to increase long-term cash flows rather than focus on short-term flows. This situation holds for most companies. Indeed, a number of professors and consulting firms have used actual company data to show that more than 80 percent of a typical company's stock price is due to cash flows expected more than five years in the future.

This brings up an interesting question. If most of a stock's value is due to long-term cash flows, why do managers and analysts focus so much attention on quarterly earnings? Part of the answer lies in the information conveyed by short-term earnings. For example, if actual quarterly earnings are lower than expected, not because of

fundamental problems but only because a company has increased its R&D expenditures, studies have shown that the stock price probably won't decline and may actually increase. This makes sense, because R&D should increase future cash flows. On the other hand, if quarterly earnings are lower than expected because customers don't like the company's new products, then this new information will have negative implications for future values of  $g$ , the long-term growth rate. As we show later in this chapter, small changes in  $g$  can lead to large changes in stock prices. Therefore, while the quarterly earnings itself might not be terribly important, the information they convey about future prospects can be terribly important.

Another reason many managers focus on short-term earnings is that some firms pay managerial bonuses on the basis of current earnings rather than stock prices (which reflect future earnings). For these managers, the concern with quarterly earnings is due to their effect on stock prices—it's due to current earnings' effect on bonuses.

### Expected Rate of Return on a Constant Growth Stock

We can solve Equation 9-4 for  $k_s$ , again using the hat to denote that we are dealing with an expected rate of return.<sup>10</sup>

$$\begin{aligned} \text{Expected rate of return} &= \text{Expected dividend yield} + \text{Expected growth rate, or capital gains yield} \\ \hat{k}_s &= \frac{D_1}{P_0} + g \end{aligned} \quad (9-5)$$

Thus, if you buy a stock for a price  $P_0 = \$23$ , and if you expect the stock to pay a dividend  $D_1 = \$1.242$  one year from now and to grow at a constant rate  $g = 8\%$  in the future, then your expected rate of return will be 13.4 percent:

$$\hat{k}_s = \frac{\$1.242}{\$23} + 8\% = 5.4\% + 8\% = 13.4\%.$$

In this form, we see that  $\hat{k}_s$  is the *expected total return* and that it consists of an *expected dividend yield*,  $D_1/P_0 = 5.4\%$ , plus an *expected growth rate or capital gains yield*,  $g = 8\%$ .

Suppose this analysis had been conducted on January 1, 1999, so  $P_0 = \$23$  is the January 1, 1999, stock price, and  $D_1 = \$1.242$  is the dividend expected at the end of 1999. What is the expected stock price at the end of 1999? We would again apply Equation 9-4, but this time we would use the year-end dividend,  $D_2 = D_1(1 + g) = \$1.242(1.08) = \$1.3414$ :

$$\hat{P}_{12/31/99} = \frac{D_{2000}}{k_s - g} = \frac{\$1.3414}{0.134 - 0.08} = \$24.84.$$

Now, notice that \$24.84 is 8 percent greater than  $P_0$ , the \$23 price on January 1, 1999:

$$\$23(1.08) = \$24.84.$$

<sup>9</sup>Many apparent puzzles in finance can be explained either by managerial compensation systems or by peculiar features of the Tax Code. So, if you can't explain a firm's behavior in terms of economic logic, look to bonuses or taxes as possible explanations.

<sup>10</sup>The  $k_s$  value in Equation 9-4 is a *required* rate of return, but when we transform to obtain Equation 9-5 we are finding an *expected* rate of return. The transformation requires that  $k_s = \hat{k}_s$ , which holds if the stock market is in equilibrium, a condition that will be discussed later in the chapter.



Thus, we would expect to make a capital gain of  $\$24.84 - \$23.00 = \$1.84$  during 1999, which would provide a capital gains yield of 8 percent:

$$\text{Capital gains yield}_{1999} = \frac{\text{Capital gain}}{\text{Beginning price}} = \frac{\$1.84}{\$23.00} = 0.08 = 8\%.$$

We could extend the analysis on out, and in each future year the expected capital gains yield would always equal  $g$ , the expected dividend growth rate.

Continuing, the dividend yield in 2000 could be estimated as follows:

$$\text{Dividend yield}_{2000} = \frac{D_{2000}}{P_{12/31/99}} = \frac{\$1.3414}{\$24.84} = 0.054 = 5.4\%.$$

The dividend yield for 2001 could also be calculated, and again it would be 5.4 percent. Thus, *for a constant growth stock*, the following conditions must hold:

1. The dividend is expected to grow forever at a constant rate,  $g$ .
2. The stock price is expected to grow at that same rate.
3. The expected dividend yield is a constant.
4. The expected capital gains yield is also a constant, and it is equal to  $g$ .
5. The expected total return,  $\hat{k}_s$ , is equal to the expected dividend yield plus the expected growth rate:  $\hat{k}_s = \text{dividend yield} + g$ .

The term *expected* should be clarified—it means expected in a probabilistic sense, as the statistically expected outcome. Thus, if we say the growth rate is expected to remain constant at 8 percent, we mean that the best prediction for the growth rate in any future year is 8 percent, not that we literally expect the growth rate to be exactly 8 percent in each future year. In this sense, the constant growth assumption is reasonable for many large, mature companies.

### Supernormal, or Nonconstant, Growth

Firms typically go through *life cycles*. During the early part of their lives, their growth is much faster than that of the economy as a whole; then they match the economy's growth; and finally their growth is slower than that of the economy.<sup>11</sup> Automobile manufacturers in the 1920s and computer software firms such as Microsoft in the 1990s are examples of firms in the early part of the cycle; these firms are called **supernormal, or nonconstant, growth** firms. Figure 9-3 illustrates nonconstant growth and also compares it with normal growth, zero growth, and negative growth.<sup>12</sup>

<sup>11</sup>The concept of life cycles could be broadened to *product cycle*, which would include both small startup companies and large companies like Procter & Gamble, which periodically introduce new products that give sales and earnings a boost. We should also mention *business cycles*, which alternately depress and boost sales and profits. The growth rate just after a major new product has been introduced, or just after a firm emerges from the depths of a recession, is likely to be much higher than the "expected long-run average growth rate," which is the proper number for a DCF analysis.

<sup>12</sup>A negative growth rate indicates a declining company. A mining company whose profits are falling because of a declining ore body is an example. Someone buying such a company would expect its earnings, and consequently its dividends and stock price, to decline each year, and this would lead to capital losses rather than capital gains. Obviously, a declining company's stock price will be relatively low, and its dividend yield must be high enough to offset the expected capital loss and still produce a competitive total return. Students sometimes argue that they would not be willing to buy a stock whose price was expected to decline. However, if the annual dividends are large enough to *more than offset* the falling stock price, the stock could still provide a good return.



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23. Explain why Dr. Weaver uses a 2001-2002 average on Schedules 17-28, but uses a 2000-2002 average on Schedules 29-30.

Answer:

Schedules 17 through 28 are for cash flow risk assessment. Cash flow statements are constructed by taking the difference in asset and liability accounts from one year to the next. Three years of data are needed to prepare two years of cash flows. Schedules 29 and 30 are comparing three years of individual accounts from the income statement and balance sheet.



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24. In reference to Schedules 39 and 40:

- a. Explain how the convergence from current growth to growth in 2007 is derived and provide all assumptions and calculations used.
- b. If different convergence assumptions are used for different companies, explain why this is so.
- c. Explain how the 2002-2003 growth rate is calculated and provide all assumptions and data underlying the calculation.

Answer:

- a. See testimony, page 49, lines 4-8.
- b. The same assumption was used for each company.
- c. As explained in the footnote to Schedules 39 and 40, "the 2003 growth rate is the dividend growth rate achieved from 2002-2003 from Value Line." For example, the 2003 dividend for Cinergy was \$1.84 and the 2002 dividend was \$1.80. The calculation is:  $(\$1.84/\$1.80-1) * 100=2.22\%$ . The only assumption is that the Value Line data is correct. The data used is:

<u>Company</u>	<u>2003 Dividend</u>	<u>2002 Dividend</u>
Cinergy	1.84	1.80
DTE	2.06	2.06
FPL	2.40	2.32
MGE	1.35	1.34
Southern	1.39	1.36
Constellation	0.96	1.04
Empire	1.28	1.28
PNM	0.86	0.91
Progress	2.18	2.26

There is an error in the 2003 growth rate for Southern. It should be 2.20%. Attached is a revised Schedule 39 with the corrected growth, dividends, perpetuity value, and IRR.

*Item 24, page 1*

**Kentucky Utilities  
Multi-stage DCF Model**

Company	Year	Cinergy Corp.		DTE Energy		FPL Group		MGE Energy		Southern Company	
		Growth	Div.	Growth	Div.	Growth	Div.	Growth	Div.	Growth	Div.
Current Dividend:			1.84		2.08		2.40		1.36		1.39
11/03/03 Stock Price			-36.43		-35.85		-64.16		-31.87		-29.72
Projected Dividends:	2003	2.22%	1.88	0.00%	2.08	3.45%	2.48	0.75%	1.37	2.21%	1.42
	2004	2.61%	1.93	1.32%	2.11	3.81%	2.58	2.06%	1.40	2.96%	1.46
	2005	3.00%	1.99	2.65%	2.16	4.18%	2.69	3.37%	1.45	3.72%	1.52
	2006	3.38%	2.05	3.97%	2.25	4.54%	2.81	4.68%	1.51	4.47%	1.58
	2007	3.78%	2.13	5.29%	2.37	4.91%	2.94	6.00%	1.60	5.23%	1.67
	2008	3.78%	2.21	5.29%	2.49	4.91%	3.09	6.00%	1.70	5.23%	1.76
	2009	3.78%	2.30	5.29%	2.63	4.91%	3.24	6.00%	1.80	5.23%	1.85
	2010	3.78%	2.38	5.29%	2.76	4.91%	3.40	6.00%	1.91	5.23%	1.94
	2011	3.78%	2.47	5.29%	2.91	4.91%	3.57	6.00%	2.03	5.23%	2.05
	2012	3.78%	2.57	5.29%	3.06	4.91%	3.74	6.00%	2.15	5.23%	2.15
	2013	3.78%	2.66	5.29%	3.23	4.91%	3.93	6.00%	2.28	5.23%	2.26
	2014	3.78%	2.77	5.29%	3.40	4.91%	4.12	6.00%	2.41	5.23%	2.38
	2015	3.78%	2.87	5.29%	3.58	4.91%	4.32	6.00%	2.56	5.23%	2.51
	2016	3.78%	2.98	5.29%	3.77	4.91%	4.53	6.00%	2.71	5.23%	2.64
	2017	3.78%	3.09	5.29%	3.97	4.91%	4.76	6.00%	2.87	5.23%	2.78
PV of dividend perpetuity in 2018:			64.79		80.91		137.08		80.13		66.86
Internal Rate of Return:			8.5%		10.4%		8.5%		9.8%		9.6%
Average Internal Rate of Return:											<u>9.37%</u>

Notes: The Current Dividend is the latest quarterly dividend times 4 from Schedule 34.

The 2003 rate of growth is the dividend growth rate achieved from 2002-2003 from Value Line.

The 2003 rate of growth converges on the 3-5 year growth forecast (the average of the Zacks, Multex, Thomson, and Value Line EPS for each company) in the year 2007 which is 4 years beyond the forecast date.

The formula for determining the PV of perpetual dividends equals  $[D_{\text{Year}}(1+g)/(k-g)]$  where  $k$  is the iteratively determined IRR and  $g$  is the growth rate.



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25. Explain what changes in risk have occurred for KU to lead Dr. Weaver to recommend a 50-100 basis point lower cost of equity for KU compared with LG&E when the Commission less than three years ago, determined that both Companies had the same required return.

Answer:

I disagree with the Commission decision that was made three years ago. KU had more equity in its capital structure and this fact alone would cause it to have a lower cost of equity.





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26. Throughout his testimony Dr. Weaver utilizes the equity ratio of 59.6% for KU. Please provide the calculation of the equity ratio using the current methodology of adjusting the capitalization for Environmental Surcharge costs as approved in Case Number 2003-068.

Answer:

The 59.6% equity ratio for KU was taken from page V-10 of the BWG Report, the capital structure dated May 22, 2003. I did not calculate a different capital structure.



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27. Why didn't Dr. Weaver utilize the current methodology for adjusting the capitalization for Environmental Surcharge costs for KU?

Answer:

I was planning to prepare a different capital structure with different capital cost rates. However, I did not receive the response to the Attorney General's first data request, questions 9, 10, 11, and 12, until the evening of November 24. The testimony was due to be filed with the Commission on December 1, a Monday. Therefore, I needed to have it available for the Attorney General's Office by Friday morning the 28<sup>th</sup>. It had to be e-mailed on the evening of the 27<sup>th</sup>. That allowed three days, the 25<sup>th</sup>, 26<sup>th</sup>, and 27<sup>th</sup>, to incorporate the information from the responses from the Company. This time frame did not allow me to include any capital structure analysis in the testimony.



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28. Throughout his testimony Dr. Weaver utilized the equity ratio of 50.26% for LG&E. Please provide the calculation of the equity ratio using the current methodology of adjusting the capitalization for environmental Surcharge costs as approved in Case Number 2003-236.

Answer:

See response to question 26 and question 27.



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29. Why didn't Dr. Weaver utilize the current methodology for adjusting the capitalization for Environmental Surcharge costs for LG&E?

Answer:

See the response to question 26 and question 27.





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30. On lines 11-12 of page 27 Dr. Weaver states that using cash flows including changes in working capital provides better information for the analysis. Explain why the proceeds from the sale of accounts receivable associated with the accounts receivable securitization program of KU and LG&E should be included in cash flow for operations rather than cash flows from financing if the balances outstanding under the accounts receivable securitization program are considered as debt in determining the capital structure of the companies for purposes fo the ESM.

Answer:

The accounts receivable securitization program, as I understand the program, uses accounts receivable as security or collateral for debt financing. The accounts receivable balance as of the end of the year remains on the balance sheet in current assets. When accounts receivable on the balance sheet increase, funds are tied up because a sale has been made, the cost of the sale has been incurred, and the collection from the sale has not occurred. A decrease in accounts receivable is a source of funds. The accounts receivable themselves are similar to fixed assets that are used to secure 1<sup>st</sup> mortgage bonds. The change in fixed assets are included in Cash Flow from Investment Activities and if a 1<sup>st</sup> mortgage bond was issued to obtain funds for financing, the debt financing is included in Cash Flow from Financing Activities.



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31. What adjustments, if any did Dr. Weaver make to the capital structure of LG&E and KU to incorporate long-term purchased power obligations that are considered to be debt equivalents by the rating agencies?

Answer:

See response to questions 26 and 27.